

P-W

BUTTES #1-31 NAVAJO
NE NE 31-35N-27E APACHE CO. 526

sl

COUNTY Apache AREA 15 mi/Round Rock Trading Post LEASE NO. 14-20-0603-1576

WELL NAME Buttes Gas & Oil #1-31 Navajo

LOCATION NE NE SEC 31 TWP 35N RANGE 27E FOOTAGE 820' FNL 560' FEL
 ELEV 5864' GR 5880 KB SPUD DATE 12-13-69 STATUS P&A TOTAL DEPTH 2482'
 COMP. DATE 12-24-69

CONTRACTOR Loffland Brothers, Farmington, New Mexico

CASING SIZE	DEPTH	CEMENT	LINER SIZE & DEPTH	DRILLED BY ROTARY
8 5/8	229	125 SK	NA	<u>x</u>
				DRILLED BY CABLE TOOL
				PRODUCTIVE RESERVOIR
				INITIAL PRODUCTION <u>P&A</u>

FORMATION TOPS	DEPTHS	SOURCE		REMARKS
		L.L.	E.L.	
DeChelly	Surface	x	x	
Hermosa	1408			
Mississippian	1802			
Elbert	2012			
McCracken	2208			
Aneth 1	2352			
Cambrian	2424			
Pre-Cambrian	2460			
Total Depth	2482			

ELECTRIC LOGS	PERFORATED INTERVALS	PROD. INTERVALS	SAMPLE LOG <u>Am Strat</u>
IE log: 2; BHC-CR	NA	NA	SAMPLE DESCRP.
			* SAMPLE NO. <u> </u>
			CORE ANALYSIS
			DSTs
			*1602 - Tucson 2595
REMARKS			APP. TO PLUG
			PLUGGING REP.
			COMP. REPORT

WATER WELL ACCEPTED BY

BOND CO. Pacific Indemnity Company BOND NO. 326966
 BOND AMT. \$ 5,000 CANCELLED 10-19-70 DATE 5-8-68
 FILING RECEIPT 2860 LOC. PLAT 12-8-69 WELL BOOK x PLAT BOOK x
 API NO. 02-001-20125 DATE ISSUED 12-16-69 DEDICATION

PERMIT NUMBER 526

(over)

NO.	FROM	TO	RESULTS
1	1907	1963	Mississippian - Rec. 3' of drilling mud
2	2224	2280	Dev.-McCracken Rec. 640' (240 mud, 310' middy slightly salty water, 90' slightly gas cut salt water

[illegible][illegible]

DATE STARTED - COMPLETED		WORK PERFORMED	NEW PERFORATIONS

ADDITIONAL INFORMATION

ADDITIONAL INFORMATION

WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG																	
DESIGNATE TYPE OF COMPLETION:																	
New Well	<input checked="" type="checkbox"/>	Work-Over	<input type="checkbox"/>	Deepen	<input type="checkbox"/>	Plug Back	<input type="checkbox"/>	Same Reservoir	<input type="checkbox"/>	Different Reservoir	<input type="checkbox"/>	Oil	<input type="checkbox"/>	Gas	<input type="checkbox"/>	Dry	<input checked="" type="checkbox"/>
DESCRIPTION OF WELL AND LEASE																	
Operator Buttes Gas & Oil Co.						Address 420 C. A. Johnson Bldg., Denver, Colorado											
Federal, State or Indian Lease Number or name of lessor if fee lease 14-20-0603-1576						Well Number 1-31				Field & Reservoir Wildcat							
Location 820³ FNL, 560³ FEL						County Apache											
Sec. TWP-Range or Block & Survey Section 31, T35N, R27E																	
Date spudded 12-13-69			Date total depth reached 12-23-69			Date completed, ready to produce Dry			Elevation XXX 5880 feet			Elevation of casing hd. flange -- feet					
Total depth 2482³			P.B.T.D. surface			Single, dual or triple completion? Dry			If this is a dual or triple completion, furnish separate report for each completion. --								
Producing interval (s) for this completion Dry						Rotary tools used (Interval) 0-2482³						Cable tools used (Interval) --					
Was this well directionally drilled? No			Was directional survey made? --			Was copy of directional survey filed? --			Date filed --								
Type of electrical or other logs run (check logs filed with the commission) IES, BHC/GR												Date filed Attached 2-4-70					
CASING RECORD																	
Casing (report all strings set in well—conductor, surface, intermediate, producing, etc.)																	
Purpose	Size hole drilled	Size casing set	Weight (lb./ft.)	Depth set	Sacks cement	Amt. pulled											
surface	12 1/4	8 5/8	24	229	125	0 ³											
TUBING RECORD						LINER RECORD											
Size	Depth set	Packer set at	Size	Top	Bottom	Sacks cement	Screen (ft.)										
-- in.	-- ft.	-- ft.	-- in.	-- ft.	-- ft.	--	--										
PERFORATION RECORD						ACID, SHOT, FRACTURE, CEMENT SQUEEZE RECORD											
Number per ft.	Size & type	Depth Interval	Am't. & kind of material used		Depth Interval												
--	--	--	--		--												
INITIAL PRODUCTION																	
Date of first production Dry				Producing method (Indicate if flowing, gas lift or pumping—if pumping, show size & type of pump:) --													
Date of test	Hrs. tested	Choke size	Oil prod. during test	Gas prod. during test	Water prod. during test	Oil gravity											
--	--	--	bbls.	MCF	bbls.	--° API (Corr)											
Tubing pressure	Casing pressure	Cal'd rate of Production per 24 hrs.	Oil	Gas	Water	Gas-oil ratio											
--	--	--	bbls.	MCF	bbls.	--											
Disposition of gas (state whether vented, used for fuel or sold): --																	
<p>CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the <u>Engineer</u> of the <u>Buttes Gas & Oil Co.</u> (company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.</p> <p>Date <u>February 4, 1970</u> Signature <u>John E. We...</u></p>																	
Permit No. 526						<p style="text-align: center;">STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION</p> <p style="text-align: center;">Well Completion or Recompletion Report and Well Log</p> <p style="text-align: center;">Form No. 4 File <input type="checkbox"/> Copy <input type="checkbox"/></p>											

DETAIL OF FORMATIONS PENETRATED

Formation	Top	Bottom	Description*
DeChelly	surface		
Organ Rock	855'		
Hermosa	1408'		
Chaetetes	1574'		
Molas	1655'		
Mississippian	1802'		
Devonian Elbert	2012'		
McCracken	2208'		
Aneth	2352'		
Cambrian	2424'		
Weathered Granite	2452'		
Pre-Cambrian	2460'		
NO CORES			
DST No. 1	1907'-1963'	(Mississippian)	
IHP		911 Psi	
IFP	(5 min.)	39 Psi	
ISIP	(60 min.)	Not recorded	
FFP	(90 min.)	39 Psi	
FSIP	(90 min.)	Not recorded	
FHP		911 Psi	
BHT		82° F	
Recovered 3' of drilling mud.			
DST No. 2	2224'-2280'	(Dev.-McCracken)	
IHP		1055 Psi	
IFP	(5 min.)	105 Psi	
ISIP	(60 min.)	599 Psi	
FFP	(90 min.)	320 Psi	
FSIP	(90 min.)	579 Psi	
FHP		1055 Psi	
BHT		84° F	
Recovered 640' total as follows: 240' mud, 310' muddy slightly salty water, 90' slightly gas cut salt water.			

* Show all important zones of porosity, detail of all cores, and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries.

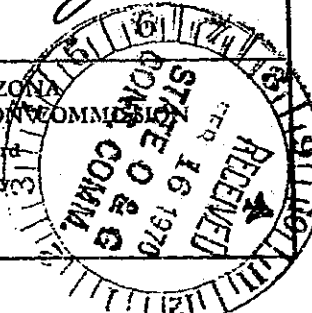
INSTRUCTIONS:

Attach drillers log or other acceptable log of well.

This Well Completion or Recompletion report and well log shall be filed with the State of Arizona Oil & Gas Conservation Commission not later than thirty days after project completion.

Form No. 4

PLUGGING RECORD					
Operator Buttes Gas & Oil Co.			Address 420 C. A. Johnson Bldg., Denver, Colorado		
Federal, State, or Indian Lease Number, or lessor's name if fee lease. 14-20-0603-1576		Well No. 1-31	Field & Reservoir Wildcat		
Location of Well 820¹ FNL, 560¹ FEL, Sec. 31, T35N, R27E				County Apache	
Application to drill this well was filed in name of Buttes Gas & Oil Co.		Has this well ever produced oil or gas No		Character of well at completion (initial production): Oil (bbls/day) -- Gas (MCF/day) -- Dry? X	
Date plugged: 12-24-69		Total depth 2482¹		Amount well producing when plugged: Oil (bbls/day) Dry Gas (MCF/day) -- Water (bbls/day) --	
Name of each formation. Indicate which formation open to well-bore at time of plugging		Fluid content of each formation		Depth interval of each formation	
No. 1 Aneth & McCracken		--		2150¹-2375¹	
No. 2 Mississippian		--		1700¹-1850¹	
No. 3 Hermosa		--		1350¹-1450¹	
No. 4 Organ Rock		--		800¹-900¹	
No. 5 surface csq. shde		--		200¹-250¹	
No. 6 Surface		--		----	
CASING RECORD					
Size pipe	Put in well (ft.)	Pulled out (ft.)	Left in well (ft.)	Give depth and method of parting casing (shot, ripped, etc.)	Packers and shoes
8 5/8"	229¹	0¹	229¹		cemented with 125 sx.
Was well filled with mud-laden fluid, according to regulations? Yes				Indicate deepest formation containing fresh water. ---	
NAMES AND ADDRESSES OF ADJACENT LEASE OPERATORS OR OWNERS OF THE SURFACE					
Name		Address		Direction from this well:	
In addition to other information required on this form, if this well was plugged back for use as a fresh water well, give all pertinent details of plugging operations to base of fresh water sand, perforated interval to fresh water sand, name and address of surface owner, and attach letter from surface owner authorizing completion of this well as a water well and agreeing to assume full liability for any subsequent plugging which might be required. --					
Use reverse side for additional detail.					
CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the <u>Engineer</u> of the <u>Buttes Gas & Oil Co.</u> (company) and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.					
Date February 4, 1970		Signature <i>John E. Way</i>			
Permit No. 526		STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION Plugging Record File One Copy			



APPLICATION TO ABANDON AND PLUG

FIELD Wildcat
OPERATOR Buttes Gas & Oil Co. ADDRESS 420 C. A. Johnson Building
Federal, State, or Indian Lease Number 14-20-0603-1576 WELL NO. 1-31 Navajo
or Lessor's Name if Fee Lease
SURVEY SECTION 31-35N-27E COUNTY Apache
LOCATION 820¹ FNL, 560¹ FEL, Section 31, T35N, R27E, Apache County, Arizona

TYPE OF WELL Dry TOTAL DEPTH 2482¹
(Oil, Gas or Dry Hole)
ALLOWABLE (If Assigned) Dry
LAST PRODUCTION TEST OIL Dry (Bbls.) WATER --- (Bbls.)
GAS --- (MCF) DATE OF TEST ---
PRODUCING HORIZON --- PRODUCING FROM --- TO ---

1. COMPLETE CASING RECORD 8 5/8", 24 lb., K-55, ST&C casing cemented at 229¹ with
125 Sx.
7 7/8" hole drilled to T.D. of 2482¹.

2. FULL DETAILS OF PROPOSED PLAN OF WORK Received oral permission from USGS and State of
Arizona Oil and Gas Conservation Commission to plug as follows:

Plug No. 1	2150 ¹ -2375 ¹	65 sx.	Plug No. 5	200 ¹ -250 ¹	20 sx.
Plug No. 2	1700 ¹ -1850 ¹	45 sx.	Plug No. 6	surface	10 sx.
Plug No. 3	1350 ¹ -1450 ¹	30 sx.			
Plug No. 4	800 ¹ -900 ¹	30 sx.			

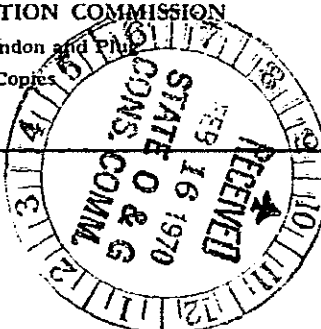
If well is to be abandoned, does proposed work conform with requirements of Rule 202? Yes If not, outline proposed procedure above.

DATE COMMENCING OPERATIONS December 24, 1969
NAME OF PERSON DOING WORK Harold H. Brown ADDRESS Petroleum Club Plaza
Farmington, New Mexico 87401
CORRESPONDENCE SHOULD BE SENT TO John E. Wey
Name John E. Wey
Title Engineer
Address 420 C. A. Johnson Bldg., Denver, Colorado 80202
Date February 2, 1970

Date Approved 2-16-70
STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION
By: John E. Wey

Permit No. 526

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION
Application to Abandon and Plug
File Two Copies
Form No. 9



#526 BUTTES #1-31 NAVAJO (1576)

#526

Selections from Ronald Brown (Geologist) 12-24-69
Verbal Permission To P&H. J.R.

FORMATION TOPS:

ORGAN ROCK 855

HERNOSA 1408

MISS 1802

ELBERT 2012

M^cCRACKEN 2208

ANETH 2352

CAMBRIAN 2424

PRE-CAMBRIAN 2460

TD 2482 (driller)

TD 2478 (logger)

SET 85/8 @ 229 W/125 SX

NO CORES.

DST # 1 : 1907-1963 (MISS) REC 3' M

DST # 2 : 2224-2280 (M^cCRACKEN); REC

240' MUD, 310' MUD-CUT SALT WTR;

90' slightly GAS-CUT WTR.

PLUGS: 2150-2375

1700-1850

1350-1450

800-900

200-250

526

10 SX @ SURFACE plus MARKER.

01

01

January 7, 1970

Samples on the Buttes Gas & Oil Co.,
Nasajo 1-31, Sec 31, T35N-R27E,
Apache County, Arizona, were delivered
to the Four Corners Sample Cwt on
Dec 31, 1969 for cutting and distribution
to Arizona.

Harold W. Brown
Pet. Plaza Bldg.
Farmington, N. Mex.

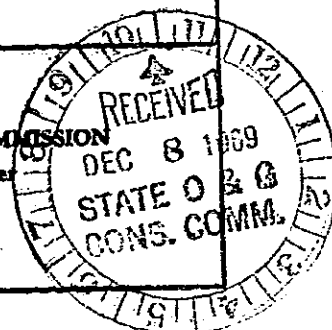
Samples from the following wells have been
received at the Cut.

Mesa Petr. #1-4 Navajo
Sec.4-35N-30E
Apache Co. Ariz. Permit # 525

Buttes O & G #1-31 Navajo
Sec.31-35N-27E
Apache Co. Ariz. Permit # 526

Jo Ratcliff
FOUR LUNNERS SAMPLE CUT ASSOCIATION
P. O. BOX 899
FARMINGTON, NEW MEXICO

APPLICATION FOR PERMIT TO DRILL OR RE-ENTER			
APPLICATION TO DRILL <input checked="" type="checkbox"/>		RE-ENTER OLD WELL <input type="checkbox"/>	
Buttes Gas & Oil Co. NAME OF COMPANY OR OPERATOR			
420 C. A. Johnson Bldg., Address		Denver, Colorado 80202 City State	
Loffland Brothers Co. Drilling Contractor			
Box 688, Farmington, New Mexico 87401 Address			
DESCRIPTION OF WELL AND LEASE			
Federal, State or Indian Lease Number, or if fee lease, name of lessor 14-20-0603-1576		Well number No. 1-31 Navajo	
Nearest distance from proposed location to property or lease line: * 660 feet		Elevation (ground) To be supplied	
Number of acres in lease: 631		Distance from proposed location to nearest drilling, completed or applied—for well on the same lease: None	
If lease, purchased with one or more wells drilled, from whom purchased: N. A.		Number of wells on lease, including this well, completed in or drilling to this reservoir: None	
Well location (give footage from section lines) 660 ¹ ENL, 660 ² FEL *		Section—township—range or block and survey 31-T35N-R27E	
Field and reservoir (if wildcat, so state) Wildcat		Dedication (Comply with Rule 105) 80	
Distance, in miles, and direction from nearest town or post office 15 miles from Round Rock Trading Post, Arizona		County Apache	
Proposed depth: 3300 ¹		Rotary or cable tools Rotary	
Bond Status ** See note below		Approx. date work will start 12-10-69	
Amount \$5,000.00		Filing Fee of \$25.00	
Remarks:		On file <input checked="" type="checkbox"/> Or attached <input type="checkbox"/> Attached <input checked="" type="checkbox"/>	
<p>* Ernest Echohawk to supply elevation and final location.</p> <p>** Alex & Alex, Inc., 311 California St., San Francisco, California 94104, is indemnifying Buttes by letter. Letter was sent 12-4-69 by William C. Keeling.</p>			
<p>CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the <u>Engineer</u> of the <u>Buttes Gas & Oil Co.</u> (company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.</p> <p style="text-align: right;"><i>John E. Wray</i> Signature</p> <p style="text-align: right;">December 4, 1969 Date</p>			
Permit Number: <u>526</u>		Approval Date: <u>12-10-69</u>	
Approved By: <i>John Bannister</i>		STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION Application to Drill or Re-enter File Two Copies	
Notice: Before sending in this form be sure that you have given all information requested. Much unnecessary correspondence will thus be avoided.		Form No. 3	



1. Operator shall outline the dedicated acreage for both oil and gas wells on the plat.
2. A registered professional engineer or land surveyor registered in the State of Arizona or approved by the Commission shall show on the plat the location of the well and certify this information in the space provided.
3. All distances shown on the plat must be from the outer boundaries of the Section.
4. Is the Operator the only owner in the dedicated acreage outlined on the plat below? YES _____ NO X
5. If the answer to question four is "no," have the interests of all the owners been consolidated by communitization agreement or otherwise? YES X NO ____ If answer is "yes," Type of Consolidation Operating Agreement
6. If the answer to question four is "no," list all the owners and their respective interests below:

Owner <u>See Attached List</u>	Land Description
-----------------------------------	--------------------------

35 N

* Final location to be supplied by Ernest Schohawk,
Registered Land Surveyor

CERTIFICATION

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

Name
John E. Wey

Position
Engineer

Company
Buttes Gas & Oil Co.

Date
December 4, 1969

27E

I hereby certify that the well location shown on the plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed _____

Registered Professional Engineer and/or Land Surveyor
*

Certificate No. _____

PROPOSED CASING PROGRAM

Size of Casing	Weight	Grade & Type	Top	Bottom	Cementing Depths	Sacks Cement
8 5/8"	24	K-55	surface	200'	200'	125
5 1/2"	15.5	J-55	✓	3300'	3300'	125

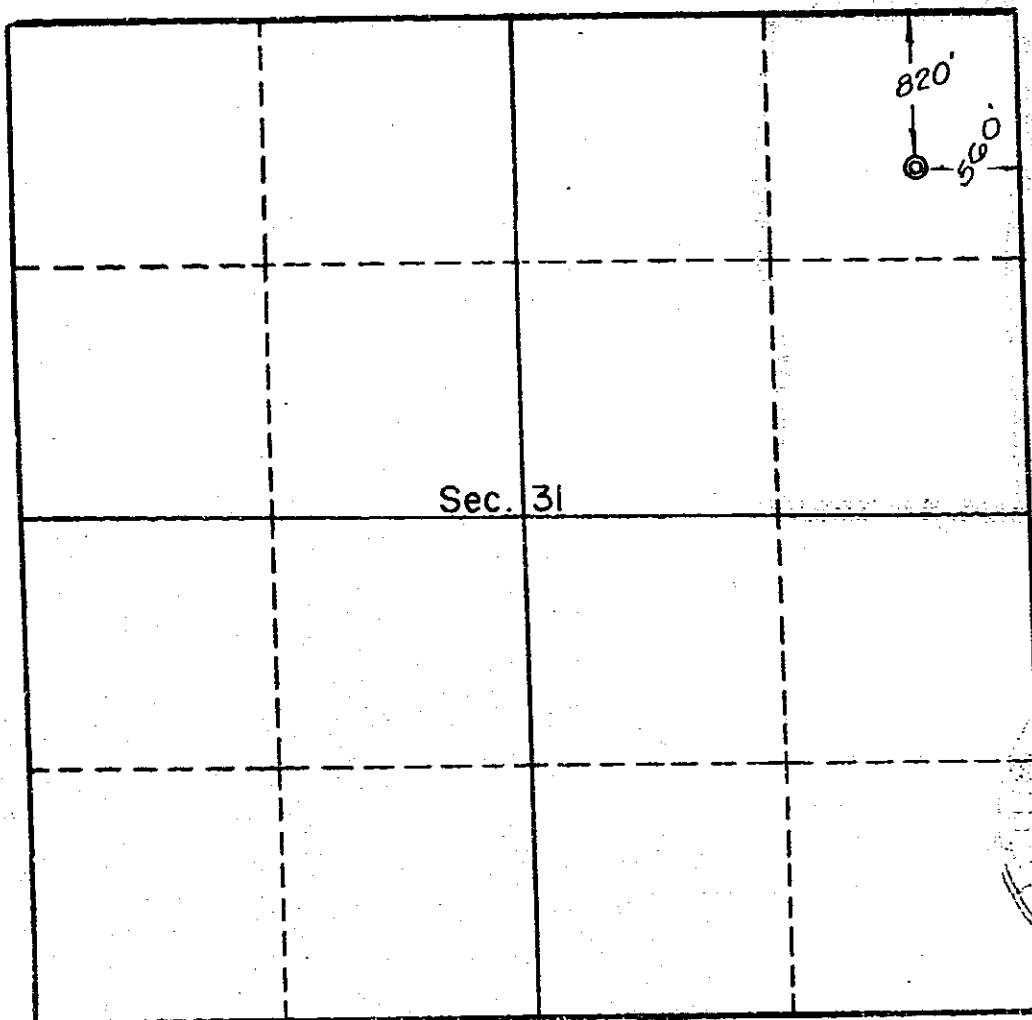
Company BUTTES GAS & OIL CO.

Well Name & No. Tseh Prospect, Navajo 1-31

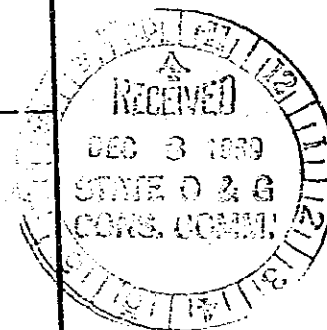
Location 820 feet from North line and 560 feet from East line.

Sec. 31, T. 35 N., R. 27 E., G. & S. R. M., County Apache, Arizona

Ground Elevation 5864

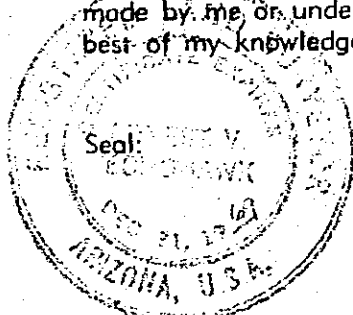


Scale, 1 inch = 1,000 feet



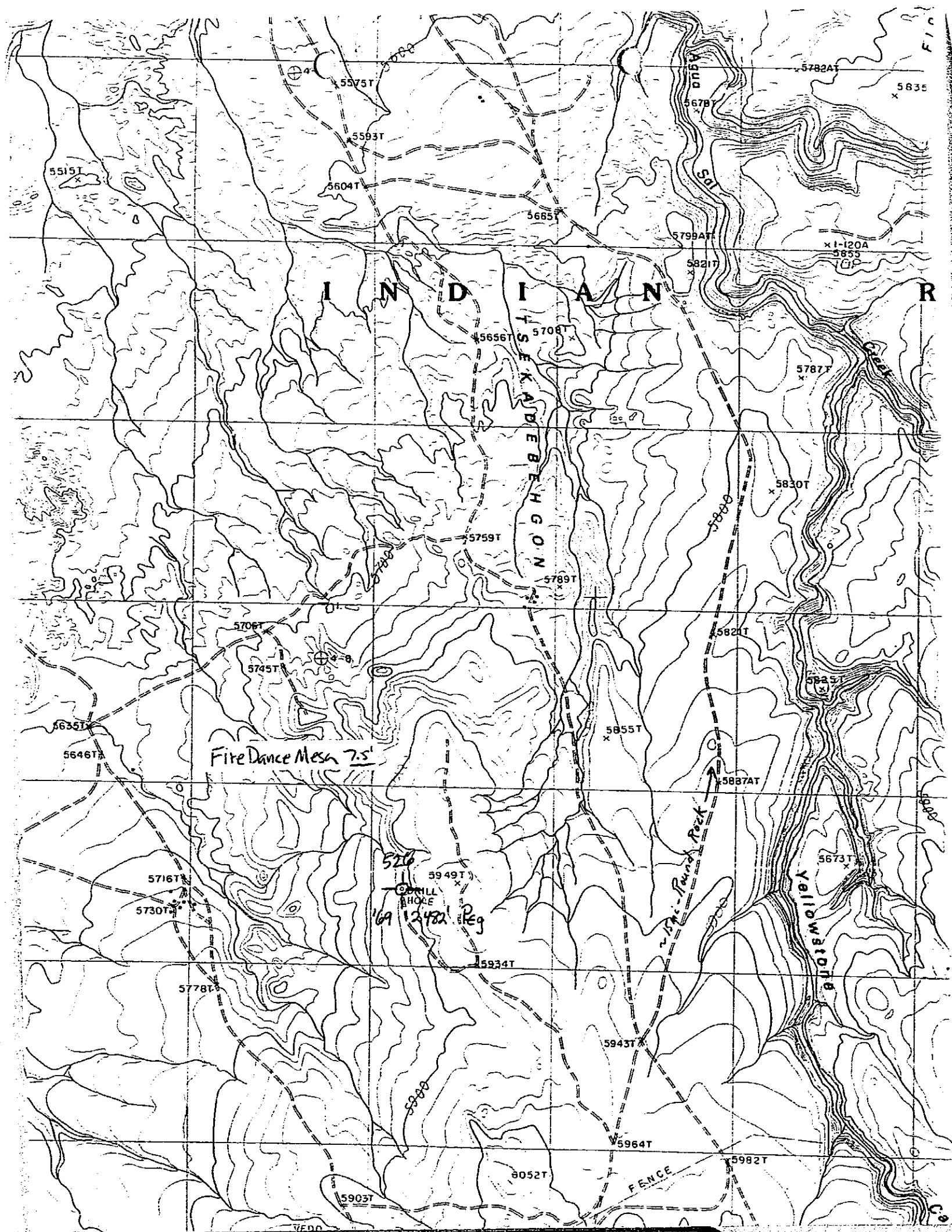
Surveyed December 3, 1969

This is to certify that the above plat was prepared from field notes of actual surveys made by me or under my supervision and that the same are true and correct to the best of my knowledge and belief.



526

Ernest V. Echohawk
Ernest V. Echohawk
Registered Land Surveyor
Arizona Registration No. 2311





PERMIT TO DRILL

This constitutes the permission and authority from the

OIL AND GAS CONSERVATION COMMISSION,
STATE OF ARIZONA,

To: BUTTES GAS & OIL COMPANY
(OPERATOR)

to drill a well to be known as

BUTTES GAS & OIL #1-31 Navajo (1576)
(WELL NAME)

located 820' FEL - 560' FEL

Section 31 Township 35N Range 27E, APACHE County, Arizona.

The E/2 NE/4 of said
Section, Township and Range is dedicated to this well.

Said well is to be drilled substantially as outlined in the attached Application and must be drilled
in full compliance with all applicable laws, statutes, rules and regulations of the State of Arizona.

Issued this 16th day of DECEMBER, 1969.

OIL AND GAS CONSERVATION COMMISSION

By John V. Bannister
EXECUTIVE SECRETARY

PERMIT No. 526

RECEIPT NO. 2860
API No. 02-001-20125

FORM NO. 27

State of Arizona
Oil & Gas Conservation Commission
Permit to Drill

SAMPLES ARE REQUIRED



Jane Dee Hull
Governor

State of Arizona
Arizona Geological Survey
416 W. Congress, Suite 100
Tucson, Arizona 85701
(520) 770-3500



Larry D. Fellows
Director and State Geologist

March 20, 2001

Mr. Melvin Badonie
Navajo Nation Dept of Water Resources
P. O Box 678
Fort Defiance AZ 86504

file 526

Dear Mel:

I have enclosed the material we talked about from the old Buttes Gas & Oil Company #1-31 Navajo well in ne ne 31-35n-27e. This includes the application to plug, plugging and completion reports, and a copy of the lithologic, sonic, and electric logs.

Sincerely,

Steve

Steven L. Rauzi
Oil & Gas Administrator

Enclosures

October 19, 1970

Mr. F. W. Trotter
Bond Department
Pacific Indemnity Company
Bank of America Center
555 California Street
San Francisco, California 94104

Re: Buttes #1-31 Navajo (1576)
NE/4 NE/4 Section 31-T35N-R27E
Apache County
Our File #526

Pacific Indemnity Company Bond Number 326966
in behalf of Buttes Gas & Oil Company

Dear Mr. Trotter:

Records of this office indicate that on 10-19-70 Buttes Gas & Oil Company fulfilled their obligations to the State of Arizona as to the requirements pertaining to the captioned well. We authorize termination of the subject bond effective this date.

Very truly yours,

W. E. Allen
Director, Enforcement Section

jd
cc: Buttes Gas & Oil Company

BUTTES GAS & OIL CO.

1200 THE DENVER CENTER BUILDING
1776 LINCOLN STREET
DENVER, COLORADO 80203

DENVER DIVISION
(303) 892-5840

October 12, 1970

WA
HOME OFFICE
OAKLAND, CALIFORNIA

State of Arizona
Oil and Gas Conservation Commission
1624 W. Adams, Room 202
Phoenix, Arizona

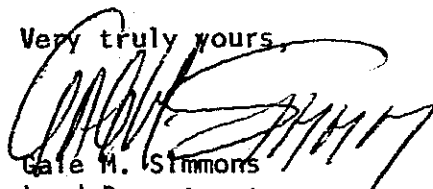
Performance Bond
No. 326966

Gentlemen:

On October 10, 1968, Buttes Gas & Oil Co. acquired the referenced bond for its drilling activities in the State of Arizona. Having drilled oil and gas wells under this bond and plugged and abandoned them in accordance with the regulations of the State of Arizona, it is our desire to terminate this bond and request permission from the Commission to do so.

Your reply would be appreciated.

Very truly yours,


Gale M. Simmons
Land Department

GMS:lc





CHUBB / PACIFIC INDEMNITY GROUP

Bank of America Center, 555 California St., San Francisco, Calif. 94104 • Phone: (415) 989-3000

WP

October 15, 1970

Oil & Gas Conservation Commission
State of Arizona
Room 202, 1624 West Adams
Phoenix, Arizona 85007

Subject: Bond No. 326966
Buttes Gas & Oil Co.

Gentlemen:

The Pacific Indemnity Company issued an Oil and Gas Drilling Bond in the amount of \$5,000. effective October 10, 1968 in behalf of Buttes Gas & Oil Co. covering all of Sections 14 & 23, Township 37 North, Range 27 East, G & SRM including approximately 1,280 acres in Apache County, Arizona, and a rider was issued on Oct. 29, 1969 including all of Section 24 Township 37 North, Range 27 East, G & SRM Apache County Arizona.

It is our understanding the terms of the bond have been complied with and there is no further requirement for its continuance.

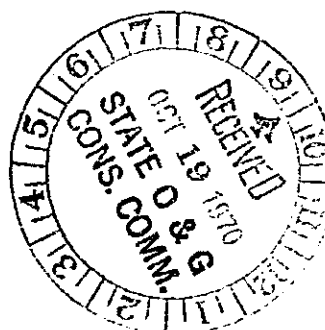
At your convenience, we shall appreciate your acknowledging cancellation of the bond in order that we may close our file.

Yours very truly,

Pacific Indemnity Company

[Signature]
F. W. Trotter
Assistant Manager
Bond Department

FWT:cb



CHUBB CORPORATION COMPANIES: Chubb & Son Inc. • Federal Insurance Company • Pacific Indemnity Company
Colonial Life Insurance Company of America • Vigilant Insurance Company • Great Northern Insurance Company • Northwestern
Pacific Indemnity Company • Texas Pacific Indemnity Company • Federal Business Products, Inc. • Macro Services Corporation.

5-26

PERFORMANCE BOND

BOND NO. 66

PREMIUM: \$50.00 per annum

KNOW ALL MEN BY THESE PRESENTS

Bond Serial No. _____

That we: Buttes Gas & Oil Co., 2150 Franklin Street, Oaklandof the County of Alameda in the State of Californiaas principal, and PACIFIC INDEMNITY COMPANY, a California Corporationof 100 Sansome St., San Francisco, California,

AUTHORIZED TO DO BUSINESS WITHIN the State of Arizona.

as surety, are held and firmly bound unto the State of Arizona and the Oil and Gas Conservation Commission, hereinafter referred to as the "Commission", in the penal sum of Five Thousand Dollars (\$5,000) lawful money of the United States, for which payment, well and truly to be made, we bind ourselves, and each of us, and each of our heirs, executors, administrators or successors, and assigns jointly and severally, firmly by these presents.

The conditions of this obligation are that, whereas the above bounden principal proposes to drill a well or wells for oil, gas or stratigraphic purposes in and upon the following described land situated within the State, to-wit:

All Sections 14 and 23, Township 37 North, Range 27 East, G & SRM1280 acres, more or less, in Apache County, Arizona

(May be used as blanket bond or for single well)

NOW, THEREFORE, if the above bounden principal shall comply with all the provisions of the Laws of this State and the rules, regulations and orders of the Commission, especially with reference to the requirements of A.R.S. § 27-516, providing for the proper drilling, casing and plugging of said well or wells, and filing with the Oil and Gas Conservation Commission all notices and records required by said Commission, then in the event said well or wells do not produce oil or gas in commercial quantities, or cease to produce oil or gas in commercial quantities, this obligation is void; otherwise it shall remain in full force and effect.

Whenever the principal shall be, and declared by the Oil and Gas Conservation Commission in violation of the Laws of this State and the rules, regulations and orders of the Commission, the surety shall promptly:

1. Remedy the violation by its own efforts, or
2. Obtain a bid or bids for submission to the Commission to remedy the violation, and upon determination by the Commission and the Surety of the lowest responsible bidder, arrange for a contract between such bidder and the Commission, and make available as work progresses sufficient funds to pay the cost of remedying the violation; but not exceeding, including other costs and damages for which the surety may be liable hereunder, the amount set forth in the first paragraph hereof.

Liability under this bond may not be terminated without written permission of this Commission.

WITNESS our hands and seals, this 10th day of October, 19 68BUTTES GAS & OIL CO.

By: _____

President

By: _____

Principal

Secretary

WITNESS our hands and seals this 10th day of October, 19 68PACIFIC INDEMNITY COMPANY

By: _____

F. W. Trotter, Attorney-in-Fact

Surety, Resident Arizona Agent
If issued in a state other than Arizona)

(If the principal is a corporation, the bond should be executed by its duly authorized officers, with the seal of the corporation affixed. When principal or surety executes this bond by agent, power of attorney or other evidence of authority must accompany the bond.)

Approved
Date10/23/68STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION

By: _____

John PannisterPermit No. 476STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION

Bond

File Two Copies

Form No. 2

☒ PACIFIC INDEMNITY COMPANY
HOME OFFICE: LOS ANGELES, CALIFORNIA

☐ TEXAS PACIFIC INDEMNITY COMPANY
HOME OFFICE: DALLAS, TEXAS

☐ NORTHWESTERN PACIFIC INDEMNITY COMPANY
HOME OFFICE: PORTLAND, OREGON

Power of Attorney

KNOW ALL MEN BY THESE PRESENTS, that the PACIFIC INDEMNITY COMPANY
a corporation of the State of California, by authority of a resolution adopted by its Board of
Directors at a meeting called and held on the 8th day of February, 1966, which said
resolution is still in full force and effect and of which the following is a true and complete copy:

"RESOLVED, that the President or any Vice-President may from time to time appoint Resident Vice-Presidents, Resident
Assistant Secretaries and Attorneys-in-Fact to represent and act for and on behalf of the Company, and either the President, or
any Vice-President, the Board of Directors or the Executive Committee may at any time remove any such Resident Vice-President
or Resident Assistant Secretaries and Attorneys-in-Fact and revoke the power and authority given him; and be it further

"RESOLVED, that Attorneys-in-Fact may be given full power and authority to execute for and in the name and on behalf of
the Company, any and all bonds, recognizances, contracts of indemnity and other writings obligatory in the nature of a bond,
recognizance or conditional undertaking, and any such instrument executed by any such Attorney-in-Fact shall be as binding
upon the Company as if signed by the President and sealed and attested by the Secretary; and be it further

"RESOLVED, that the Attorneys-in-Fact are hereby authorized to verify any affidavit required to be attached to bonds, recog-
nizances or contracts of indemnity, policies of insurance and all other writings obligatory in the nature thereof."

does hereby make, constitute and appoint

F. W. TROTTER, San Francisco, California

its true and lawful Attorney-in-Fact, with full power and authority to make, execute and deliver, for it, in its
name and in its behalf, as surety any and all bonds and undertakings of suretyship.

And the execution of such bonds or undertakings, in pursuance of these presents, shall be as binding upon
the said Corporation, as fully and amply, to all intents and purposes, as if they had been duly executed and
acknowledged by the regularly elected officers of the said Corporation in their own proper persons.

IN WITNESS WHEREOF, the PACIFIC INDEMNITY COMPANY
has caused these presents to be signed by its Vice-President and its corporate seal to be hereto affixed, duly
attested by its Assistant Secretary, this 6th day of March, A.D. 1961.

Attest: C. H. Lambertson

Assistant Secretary

By

R. L. Traviss

Vice-President.

STATE OF CALIFORNIA, }
COUNTY OF LOS ANGELES } ss.:

On this 6th day of March, A. D. 1961, before me personally came
R. L. Traviss

sworn, did depose and say, that he resides in the City of Los Angeles, California; that he is the Vice-President of the PACIFIC

INDEMNITY COMPANY

the corporation described in and which executed the above instrument; that he knows the seal of said corporation, that the seal affixed
to the said instrument is such corporate seal that it was so affixed by order of the Board of Directors of said corporation, and that he signed
his name thereto by like order.

(Notarial Seal)

Marion F. Haire

Notary Public.

STATE OF CALIFORNIA, }
COUNTY OF LOS ANGELES } ss.:

My Commission expires November 11, 1963.

I, Elizabeth H. Jones

Assistant Secretary of the PACIFIC

INDEMNITY COMPANY

, do hereby certify that the above and foregoing is a true and
correct copy of a Power of Attorney, executed by said PACIFIC INDEMNITY COMPANY
which is still in force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Company, at the City
of Los Angeles, this 10th day of October, A. D. 1968

November 6, 1969

Mr. John E. Wey
Buttes Gas & Oil Company
420 C. A. Johnson Building
Denver, Colorado 80202

Re: Buttes #1-23 Navajo
T37N, R27E, G & SRM
Sec. 23: SE/4 SE/4
Apache County
Permit #476

Dear Mr. Wey:

By letter from Elliott A. Riggs this Commission was notified that the well site was cleaned and the dry hole marker was in place. This Commission is willing to transfer Pacific Indemnity Company Bond No. 326966 to the location where the Buttes #1-24 Navajo (2200) will be drilled, on the condition that the captioned well's dry hole marker has attached to it a sign showing the name of the captioned well; its location by quarter-quarter, section, township and range; and this drilling permit number.

Our field man will inspect this site and dry hole marker at his first visit to the new well to be drilled. This letter is this Commission's acceptance of Bond No. 326966 as surety for the new well and conditional release of the bond on the captioned well.

Yours truly,

James A. Lambert
Administrative Assistant

JAL:jd
cc: Pacific Indemnity Company

Y. L. Lano
X - Lambert
X - 420

ALEXANDER & ALEXANDER

INCORPORATED

INSURANCE

CONSULTING ACTUARIES

AVERAGE ADJUSTERS

311 CALIFORNIA STREET, SAN FRANCISCO, CALIFORNIA 94104

October 30, 1969

ATLANTA
BALTIMORE
BOSTON
CHICAGO
CLARKSBURG
LOS ANGELES
MIAMI
NEWARK
NEW ORLEANS
NEW YORK
PARIS
PHILADELPHIA
PITTSBURGH
SAN FRANCISCO
ST. LOUIS
TULSA
AFFILIATE
ALEXANDER & ASSOCIATES
DALLAS
HOUSTON

AREA CODE
415

TELEPHONE
397-6120

CABLE ADDRESS
"ALEXFRAN"

Mr. John Bannister, Executive Secretary
Oil and Gas Conservation Commission
State of Arizona
1624 West Adams, Room 202
Phoenix, Arizona 85007

Dear Sir:

Buttes Gas & Oil Co.
2150 Franklin Street
Oakland, California
Oil & Gas Drilling Bond No. 326966
Pacific Indemnity Company

At the request of the principal, we are enclosing a properly executed rider to the captioned bond, which amends the described land to include all of Section 24, Township 37 North, Range 27 East, G&SRM, Apache County, Arizona effective October 29, 1969.

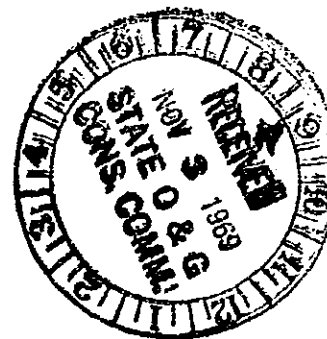
The enclosure should now complete your records and comply with your requirements. If not, or you have any additional questions, please let us know.

Yours very truly,

William L. Keeling
William L. Keeling

WLK/dg
Enclosure

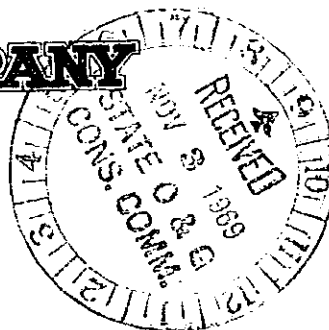
cc: Mr. L. J. Tacconi



PACIFIC INDEMNITY COMPANY

HOME OFFICE, LOS ANGELES, CALIFORNIA

R I D E R




To be attached to and made a part of Bond No. 326966 issued by the PACIFIC INDEMNITY COMPANY, effective October 10, 1968 on behalf of BUTTES GAS & OIL CO., in favor of the STATE OF ARIZONA, in the amount of FIVE THOUSAND AND NO/100 DOLLARS (\$5,000.00).

IT IS HEREBY UNDERSTOOD AND AGREED that the land described in the attached bond shall include all of Section 24, Township 37 North, Range 27 East, G & SRM, Apache County, Arizona.

The attached bond shall be subject to all its terms, conditions and limitations except as herein expressly modified.

Signed, Sealed and dated this 29th day of October, 1969.

PACIFIC INDEMNITY COMPANY

By: 
F. W. Trotter, Attorney-in-Fact

☒ PACIFIC INDEMNITY COMPANY
HOME OFFICE: LOS ANGELES, CALIFORNIA

☐ TEXAS PACIFIC INDEMNITY COMPANY
HOME OFFICE: DALLAS, TEXAS

☐ NORTHWESTERN PACIFIC INDEMNITY COMPANY
HOME OFFICE: PORTLAND, OREGON

Power of Attorney

KNOW ALL MEN BY THESE PRESENTS, that the PACIFIC INDEMNITY COMPANY
a corporation of the State of California, by authority of a resolution adopted by its Board of
Directors at a meeting called and held on the 8th day of February, 1966, which said
resolution is still in full force and effect and of which the following is a true and complete copy:

"RESOLVED, that the President or any Vice-President may from time to time appoint Resident Vice-Presidents, Resident Assistant Secretaries and Attorneys-in-Fact to represent and act for and on behalf of the Company, and either the President, or any Vice-President, the Board of Directors or the Executive Committee may at any time remove any such Resident Vice-President or Resident Assistant Secretaries and Attorneys-in-Fact and revoke the power and authority given him; and be it further

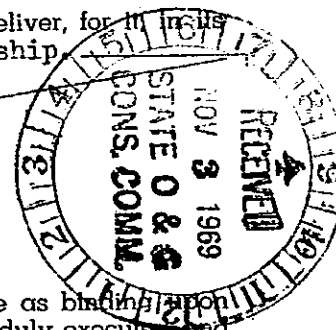
"RESOLVED, that Attorneys-in-Fact may be given full power and authority to execute for and in the name and on behalf of the Company, any and all bonds, recognizances, contracts of indemnity and other writings obligatory in the nature of a bond, recognizance or conditional undertaking, and any such instrument executed by any such Attorney-in-Fact shall be as binding upon the Company as if signed by the President and sealed and attested by the Secretary; and be it further

"RESOLVED, that the Attorneys-in-Fact are hereby authorized to verify any affidavit required to be attached to bonds, recognizances or contracts of indemnity, policies of insurance and all other writings obligatory in the nature thereof."

does hereby make, constitute and appoint

F. W. TROTTER, San Francisco, California

its true and lawful Attorney-in-Fact, with full power and authority to make, execute and deliver, for it in its
name and in its behalf, as surety any and all bonds and undertakings of suretyship.



And the execution of such bonds or undertakings, in pursuance of these presents, shall be as binding upon
the said Corporation, as fully and amply, to all intents and purposes, as if they had been duly executed and
acknowledged by the regularly elected officers of the said Corporation in their own proper persons.

IN WITNESS WHEREOF, the PACIFIC INDEMNITY COMPANY
has caused these presents to be signed by its Vice-President and its corporate seal to be hereto affixed, duly
attested by its Assistant Secretary, this 6th day of March, A.D. 1966.

Attest: C. H. Lambertson
Assistant Secretary.

By R. L. Traviss
Vice-President.

STATE OF CALIFORNIA, } ss.:
COUNTY OF LOS ANGELES }

On this 6th day of March, A. D. 1966, before me personally came
R. L. Traviss to me known, who, being by me duly

sworn, did depose and say, that he resides in the City of Los Angeles, California; that he is the Vice-President of the PACIFIC

INDEMNITY COMPANY

the corporation described in and which executed the above instrument; that he knows the seal of said corporation, that the seal affixed
to the said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that he signed
his name thereto by like order.

(Notarial Seal)

Marion F. Haire
Notary Public.

STATE OF CALIFORNIA, } ss.:
COUNTY OF LOS ANGELES }

My Commission expires November 11, 1963.

I, Elizabeth H. Jones Assistant Secretary of the PACIFIC
INDEMNITY COMPANY, do hereby certify that the above and foregoing is a true and

correct copy of a Power of Attorney, executed by said PACIFIC INDEMNITY COMPANY
which is still in force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Company, at the City
of Los Angeles, this 29th day of October, A. D. 1969

526

Elizabeth H. Jones
Assistant Secretary.

ALEXANDER & ALEXANDER

INCORPORATED

INSURANCE

CONSULTING ACTUARIES

AVERAGE ADJUSTERS

311 CALIFORNIA STREET, SAN FRANCISCO, CALIFORNIA 94104

December 4, 1969

ATLANTA
BALTIMORE
BOSTON
CHICAGO
CLARKSBURG
LOS ANGELES
MIAMI
NEWARK
NEW ORLEANS
NEW YORK
PARIS
PHILADELPHIA
PITTSBURGH
SAN FRANCISCO
ST. LOUIS
TULSA

AFFILIATE
ALEXANDER & ASSOCIATES
DALLAS
HOUSTON

AREA CODE
415

TELEPHONE
397-6120

CABLE ADDRESS
"ALEXFRAN"

Mr. John Bannister, Executive Secretary
Oil and Gas Conservation Committee
State of Arizona
1624 West Adams, Room 202
Phoenix, Arizona 85007

Dear Sir:

Buttes Gas & Oil Co.
Oil and Gas Drilling Bond No. 326966
Pacific Indemnity Company

We are enclosing the executed original and a copy of a Rider that we have had issued on the captioned bond amending its provisions to include:

the land described as Section 31, Township 35 North,
Range 27 East, G & SRM, Apache County, Arizona.

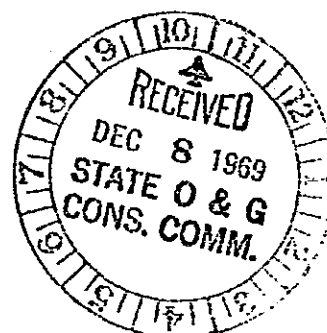
This has been done at the request of the Principal, Buttes Gas & Oil Co. and this should comply with your requirements. If not, or you have any questions, please let us know.

Very truly yours,

William L. Keeling
William L. Keeling

WLK/dg
Enclosures

cc: Mr. L. J. Tacconi
Mr. John Wey



PACIFIC INDEMNITY COMPANY

HOME OFFICE, LOS ANGELES, CALIFORNIA

R I D E R

To be attached to and made a part of Bond No. 326966 issued by PACIFIC INDEMNITY COMPANY effective October 10, 1968 on behalf of BUTTES GAS & OIL CO., in favor of the STATE OF ARIZONA, in the amount of FIVE THOUSAND AND NO/100 DOLLARS (\$5,000.00).

IT IS HEREBY UNDERSTOOD AND AGREED that the land described in the attached bond shall include Section 31, Township 35 North, Range 27 East, G&SRM, Apache County, Arizona.

The attached bond shall be subject to all its terms, conditions and limitations except as herein expressly modified.

Signed, Sealed and Dated this 3rd day of December, 1969.

No.

LICENSED AGENT COUNTERSIGNATURE ENDORSEMENT

State for which this endorsement is issued Arizona

Type of Policy or Bond Oil and Gas Drilling Bond

Premium for State \$50.00

Producing Agent or Broker ALEXANDER & ALEXANDER, INC.,

The countersignature hereto is to be considered the valid countersignature to the undermentioned policy or bond, in so far as concerns that portion of the risk located in the State named above.

Nothing herein contained shall be held to vary, alter, waive or extend any of the terms, conditions, agreements or limitations of the policy or bond other than as above stated. This endorsement forms a part of PACIFIC INDEMNITY COMPANY

~~Policy~~ Bond { Number 326966

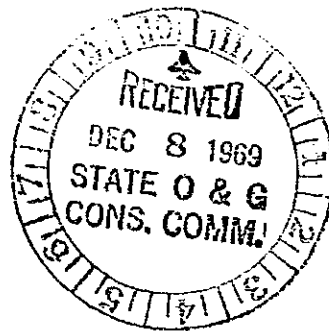
Issued to BUTTES GAS & OIL CO.

Endorsement Effective. December 3, 1969

Countersigned at Phoenix, Arizona

Date of Issue December 3, 1969

Form 1A029 60M 166



by *Carl Hester*
 PRESIDENT. 526
Robb Hester
 LICENSED AGENT
 ROBBS, HESTER & ALEXANDER, INC.
 3500 N. Central Ave., Phoenix, Arizona

PACIFIC INDEMNITY COMPANY

HOME OFFICE, LOS ANGELES, CALIFORNIA

R I D E R

To be attached to and made a part of Bond No. 326966 issued by PACIFIC INDEMNITY COMPANY effective October 10, 1968 on behalf of BUTTES GAS & OIL CO., in favor of the STATE OF ARIZONA, in the amount of FIVE THOUSAND AND NO/100 DOLLARS (\$5,000.00).

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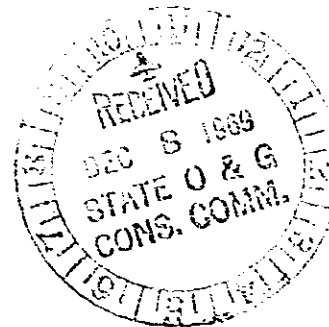
The attached bond shall be subject to all its terms, conditions and limitations except as herein expressly modified.

Signed, Sealed and Dated this 3rd day of December, 1969.

PACIFIC INDEMNITY COMPANY

By: 

F. W. Trotter, Attorney-in-Fact



☒ PACIFIC INDEMNITY COMPANY
HOME OFFICE: LOS ANGELES, CALIFORNIA

☐ TEXAS PACIFIC INDEMNITY COMPANY
HOME OFFICE: DALLAS, TEXAS

☐ NORTHWESTERN PACIFIC INDEMNITY COMPANY
HOME OFFICE: PORTLAND, OREGON

Power of Attorney

KNOW ALL MEN BY THESE PRESENTS, that the PACIFIC INDEMNITY COMPANY
a corporation of the State of California, by authority of a resolution adopted by its Board of
Directors at a meeting called and held on the 8th day of February, 1966, which said
resolution is still in full force and effect and of which the following is a true and complete copy:

"RESOLVED, that the President or any Vice-President may from time to time appoint Resident Vice-Presidents, Resident
Assistant Secretaries and Attorneys-in-Fact to represent and act for and on behalf of the Company, and either the President, or
any Vice-President, the Board of Directors or the Executive Committee may at any time remove any such Resident Vice-President
or Resident Assistant Secretaries and Attorneys-in-Fact and revoke the power and authority given him; and be it further

"RESOLVED, that Attorneys-in-Fact may be given full power and authority to execute for and in the name and on behalf of
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recognizance or conditional undertaking, and any such instrument executed by any such Attorney-in-Fact shall be as binding
upon the Company as if signed by the President and sealed and attested by the Secretary; and be it further

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nizances or contracts of indemnity, policies of insurance and all other writings obligatory in the nature thereof."

does hereby make, constitute and appoint

F. W. TROTTER, San Francisco, California

its true and lawful Attorney-in-Fact, with full power and authority to make, execute and deliver, for it, in its
name and in its behalf, as surety any and all bonds and undertakings of suretyship.

And the execution of such bonds or undertakings, in pursuance of these presents, shall be as binding upon
the said Corporation, as fully and amply, to all intents and purposes, as if they had been duly executed and
acknowledged by the regularly elected officers of the said Corporation in their own proper persons.

IN WITNESS WHEREOF, the PACIFIC INDEMNITY COMPANY
has caused these presents to be signed by its Vice-President and its corporate seal to be hereto affixed, duly
attested by its Assistant Secretary, this 6th day of March A.D. 1961

Attest: C. H. Lambertson
Assistant Secretary.

By R. L. Traviss

STATE OF CALIFORNIA, } ss.:
COUNTY OF LOS ANGELES }

On this 6th day of March A. D. 1961, Before me, personally came
R. L. Traviss to me known, who, being by me duly

sworn, did depose and say, that he resides in the City of Los Angeles, California; that he is the Vice-President of the PACIFIC

INDEMNITY COMPANY

the corporation described in and which executed the above instrument; that he knows the seal of said corporation, that the seal affixed
to the said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that he signed
his name thereto by like order.

Marion F. Haire

Notary Public.

(Notarial Seal)

STATE OF CALIFORNIA, } ss.:
COUNTY OF LOS ANGELES }

My Commission expires November 11, 1963.

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INDEMNITY COMPANY

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IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Company, at the City
of Los Angeles, this 3rd day of December A. D. 1969

PACIFIC INDEMNITY COMPANY

HOME OFFICE, LOS ANGELES, CALIFORNIA

RIDER

COPY

To be attached to and made a part of Bond No. 326966 issued by PACIFIC INDEMNITY COMPANY effective October 10, 1968 on behalf of BUTTES GAS & OIL CO., in favor of the STATE OF ARIZONA, in the amount of FIVE THOUSAND AND NO/100 DOLLARS (\$5,000.00).

IT IS HEREBY UNDERSTOOD AND AGREED that the land described in the attached bond shall include Section 31, Township 35 North, Range 27 East, G&SRM, Apache County, Arizona.

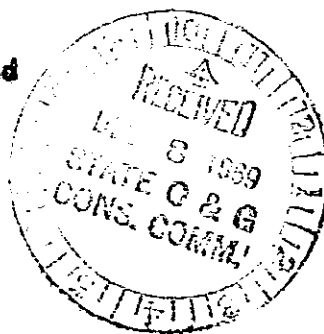
[Handwritten scribble]

The attached bond shall be subject to all its terms, conditions and limitations except as herein expressly modified.

Signed, Sealed and Dated this 3rd day of December, 1969.

PACIFIC INDEMNITY COMPANY

By: F. W. Trotter, Attorney-in-Fact



☒ PACIFIC INDEMNITY COMPANY
HOME OFFICE, LOS ANGELES, CALIFORNIA

☐ TEXAS PACIFIC INDEMNITY COMPANY
HOME OFFICE, DALLAS, TEXAS

☐ NORTHWESTERN PACIFIC INDEMNITY COMPANY
HOME OFFICE, PORTLAND, OREGON

Power of Attorney

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or Resident Assistant Secretaries and Attorneys-in-Fact and revoke the power and authority given him; and be it further

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recognizance or conditional undertaking, and any such instrument executed by any such Attorney-in-Fact shall be as binding
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does hereby make, constitute and appoint

R. W. TROTTER, San Francisco, California

its true and lawful Attorney-in-Fact, with full power and authority to make, execute and deliver, for it, in its
name and in its behalf, as surety on any and all bonds and undertakings of suretyship.

And the execution of such bonds or undertakings, in pursuance of these presents, shall be as binding upon
the said Corporation, as fully and amply, to all intents and purposes, as if they had been duly executed and
acknowledged by the regularly elected officers of the said Corporation in their own proper persons.

IN WITNESS WHEREOF, the PACIFIC INDEMNITY COMPANY
has caused these presents to be signed by its Vice-President and its corporate seal to be hereto affixed, duly
attested by its Assistant Secretary, this 6th day of March, A.D. 1966.

Attest: G. H. Lamberston
Assistant Secretary.

By R. L. Travins
Vice President,

STATE OF CALIFORNIA, }
COUNTY OF LOS ANGELES } ss:

On this 6th day of March, A. D. 1966, before me personally came

R. L. Travins to me known, who, being by me duly

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INDEMNITY COMPANY

the corporation described in and which executed the above instrument; that he knows the seal of said corporation, that the seal affixed
to the said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that he signed
his name thereto by like order.

(Notarial Seal)

Marion F. Hairs

Notary Public.

STATE OF CALIFORNIA, }
COUNTY OF LOS ANGELES } ss:

My Commission expires November 11, 1963.

I, Elizabeth H. Jones Assistant Secretary of the PACIFIC
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which is still in force and effect.

IN WITNESS WHEREOF, I have herunto set my hand and affixed the seal of said Company, at the City
of Los Angeles, this 3rd day of December, A. D. 1969.

Elizabeth H. Jones
Assistant Secretary.

February 3, 1970

Mr. John E. Wey
Buttes Gas & Oil Company
420 C. A. Johnson Building
Denver, Colorado 80202

Re: Buttes Gas & Oil #1-31 Navajo (1576)
T35N, R27E, G & SRM
Sec. 31: NE/4 NE/4
Apache County
Permit #326

Dear Mr. Wey:

On December 24, 1969, verbal permission to plug the captioned well was granted by this office. To date you have not filed the written Application to Plug, Plugging Record, or Well Completion Report. These forms are enclosed for your convenience. Your cooperation in bringing our files to date is requested.

Sincerely,

John Bannister
Executive Secretary

JB:jd

Enc.

X-Chrono

December 16, 1969

Mr. John E. Wey
Buttes Gas & Oil Company
420 C. A. Johnson Building
Denver, Colorado 80202

Re: Buttes Gas & Oil #1-31 Navajo (1576)
T35N, R27E, G & SRM
Sec. 31: NE/4 NE/4
Apache County
Permit #526

Dear Mr. Wey:

Enclosed is your approved application for Permit To Drill, a copy of the plat, our receipt No. 2860 for the \$25 filing fee, and a copy of our Permit To Drill. Also enclosed is a letter concerning the bond on the captioned well.

Yours truly,

John Bannister
Executive Secretary

jd
Enc. (6)

X-520
X-Chromo

December 16, 1969

Mr. John E. Wey
Buttes Gas & Oil Company
420 C. A. Johnson Building
Denver, Colorado 80202

Re: Buttes #1-24 Navajo (2200)	Buttes #1-31 Navajo (1576)
T37N, R28E, G & SRM	T35N, R27E, G & SRM
Sec. 24: NE/4 SE/4	Sec. 31: NE/4 NE/4
Apache County	Apache County
Permit #520	Permit #526
Pacific Indemnity Bond No. 326966	

Dear Mr. Wey:

We have received all the required Reports and notification of samples on the Buttes #1-24 Navajo, Permit #520, and everything is in order. Pursuant to a letter from Mr. William L. Keeling, Pacific Indemnity Company, dated December 4, 1969, the captioned bond is released as to the Buttes #1-24 Navajo, Sec. 24-T37N-R28E, Permit #520, and will now cover the new well Buttes #1-31 Navajo, Sec. 31-T35N-R27E, Permit #526.

Our Geologist will check the site and the dry hole marker on the Buttes #1-24 Navajo well on his next visit to that area.

Yours truly,

John Bannister
Executive Secretary

jd
copy to Pacific Indemnity Company

ERNEST V. ECHOHAWK
204 SUMMIT DRIVE
FARMINGTON, NEW MEXICO 87401

December 6, 1969

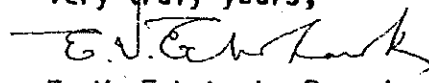
State of Arizona
Oil & Gas Conservation Commission
1624 W. Adams
Phoenix, Arizona

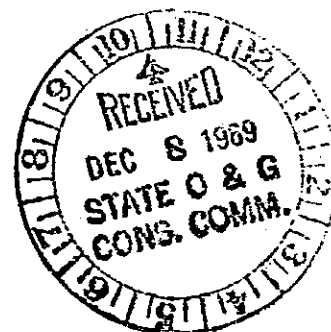
Dear Sir:

Enclosed are three(3) copies of the Well Location plat of Buttes
Gas & Oil Co.'s Well Location which is located in NE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 31,
T-35-N, R-27-E, G. & S. R. M., Apache County, Arizona.

Mr. John Wey of Buttes requested that I send these copies to your
office.

Very truly yours,


E. V. Echohawk, Reg. L. S.



TELEPHONE: 292-4820
AREA CODE: 303



SUITE 420, C. A. JOHNSON BUILDING, 509 SEVENTEENTH STREET, DENVER, COLORADO 80202

December 4, 1969

Arizona Oil & Gas Conservation Commission
Room 202
1624 West Adams
Phoenix, Arizona

Re: Tseh Prospect,
No. 1-31 Navajo well,
Sec. 31-35N-27E,
Apache County, Arizona

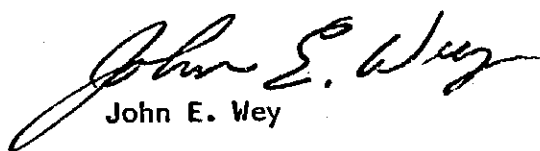
Gentlemen:

Enclosed are the required copies of the Application for
Permit to Drill the subject well.

As shown on the application Mr. Ernest Echohawk will
submit directly to you a plat and survey of the location with
the final ground elevation.

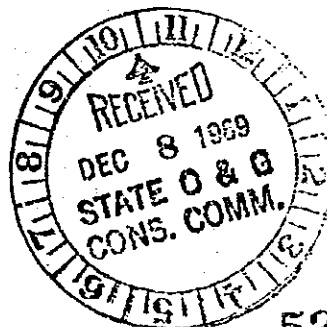
We expect to move in and start operations about December 12,
1969. May we have approval from you to start these operations.

Very truly yours,


John E. Wey

JEW/bfg

Enclosure



526

526

DATE
MO. DAY YR
12-5 9

INVOICE
NUMBER

GROSS AMOUNT

CREDITS

PREVIOUS
BALANCE

BALANCE
25.00

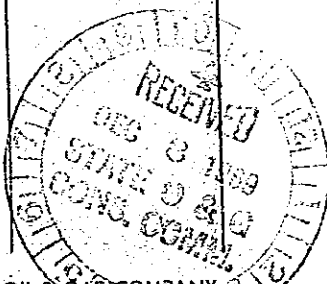
REMARKS

Drilling Permit Fee
#1-31 Navajo
Tsch Prospect

PLEASE DETACH THIS STATEMENT
BEFORE DEPOSITING CHECK

JUNIPER OIL & GAS COMPANY
SUITE 420, C. A. JOHNSON BUILDING, 509 SEVENTEENTH STREET
DENVER, COLORADO 80202
A DIVISION OF BUTTES GAS & OIL CO.

THIS CHECK IS TENDERED IN
PAYMENT OF ITEMS LISTED



31-35N-27E
NE/NE

576

4/19
4/16

P-W

SOUTHWEST SALT #1 STRAT Ranch
SW SW 2-2N-1W MARICOPA CO. 527

COUNTY Maricopa AREA 3 mi NE/Litchfield Park LEASE NO. Roach-Baker

WELL NAME Southwest Salt Company #1 Strat Roach-Baker

LOCATION SW SW SEC 2 TWP 2N RANGE 1W FOOTAGE 554' FSL, 707 FWL'
ELEV 1085' GR KB SPUD DATE 11-7-68 STATUS Abandoned P&A 6/3/90 TOTAL
COMP. DATE 8-26-69 DEPTH 4503'

CONTRACTOR J. O. Barnes, Casa Grande, Az

P&A 6/3/90

CASING SIZE	DEPTH	CEMENT	LINER SIZE & DEPTH	DRILLED BY ROTARY	DRILLED BY CABLE TOOL	PRODUCTIVE RESERVOIR	INITIAL PRODUCTION
6"	880'	120 SX	NA	<input checked="" type="checkbox"/>			

***ABANDONED SALT SOLUTION MINING WELL

FORMATION TOPS	DEPTHS	SOURCE		REMARKS
		L.L.	E.L.	
TOP ANHYDRITE	800'			
TOP SALT	830'			

ELECTRIC LOGS		PERFORATED INTERVALS	PROD. INTERVALS	SAMPLE LOG
Dual Induction-Laterlog		NA	NA	2
Compensated Density Log				SAMPLE DESCRP.
Neutron-Porosity				SAMPLE NO.
				CORE ANALYSIS
				DSTs
REMARKS <u>Cross Reference - Southwest Salt Company</u>				APP. TO PLUG <u>Yes</u>
<u>Glendale and Dysart</u>				PLUGGING REP. <u>Yes</u>
<u>A eral Photo in Map rack</u>				COMP. REPORT <u>x</u>

WATER WELL ACCEPTED BY _____

BOND CO. Fidelity & Deposit Company of Maryland BOND NO. 83-06-106

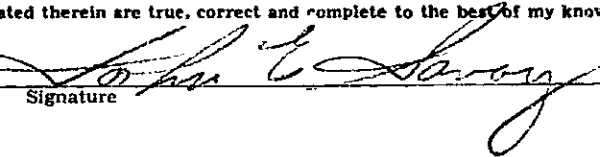
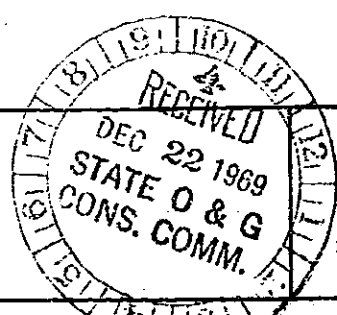
BOND AMT. \$ 5,000 CANCELLED 8/27/90 DATE _____ ORGANIZATION REPORT 1-19-69

FILING RECEIPT 2861 LOC. PLAT x WELL BOOK x PLAT BOOK x

API NO. 02-013-20001 DATE ISSUED 1-20-70 DEDICATION none

PERMIT NUMBER 527

(over)

WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG									
DESIGNATE TYPE OF COMPLETION:									
New Well <input checked="" type="checkbox"/>	Work-Over <input type="checkbox"/>	Deepen <input type="checkbox"/>	Plug Back <input type="checkbox"/>	Same Reservoir <input type="checkbox"/>	Different Reservoir <input type="checkbox"/>	Oil <input type="checkbox"/>	Gas <input type="checkbox"/>	Dry <input type="checkbox"/>	
DESCRIPTION OF WELL AND LEASE									
Operator Southwest Salt Co.				Address P. O. Box 1237, Litchfield Park, Az.					
Federal, State or Indian Lease Number or name of lessor if fee lease Roach-Baker				Well Number Salt Test #1		Field & Reservoir			
Location T2N, R1W; SW 1/4 SW 1/4 Sec. 2				County Maricopa					
Sec. TWP-Range or Block & Survey 555' N. of SSL, 745' E of WSL									
Date spudded 11/7/68		Date total depth reached 11/27/68		Date completed, ready to produce 8/26/69		Elevation (DE, RKB, RT or Gr.) 1085 Gr. feet		Elevation of casing hd. flange 1086 feet	
Total depth 4503		P.B.T.D.		Single, dual or triple completion?		If this is a dual or triple completion, furnish separate report for each completion.			
Producing interval (s) for this completion 880-1520				Rotary tools used (interval) All		Cable tools used (interval)			
Was this well directionally drilled? No		Was directional survey made?		Was copy of directional survey filed?		Date filed			
Type of electrical or other logs run (check logs filed with the commission) Neutron Porosity, Formation Density, Dual Induction						Date filed			
CASING RECORD									
Casing (report all strings set in well—conductor, surface, intermediate, producing, etc.)									
Purpose Casing	Size hole drilled 6 1/4" Bit	Size casing set 6" OD	Weight (lb./ft.)	Depth set 880 ft.	Sacks cement 120	Amt. pulled None			
TUBING RECORD									
Size 3 in.	Depth set 1520 ft.	Packer set at No ft.	Size No in.	Top ft.	Bottom ft.	Sacks cement	Screen (ft.)		
PERFORATION RECORD									
Number per ft.	Size & type	Depth Interval			Am't. & kind of material used		Depth Interval		
None					None				
INITIAL PRODUCTION									
Date of first production		Producing method (indicate if flowing, gas lift or pumping—if pumping, show size & type of pump): Not Applicable							
Date of test	Hrs. tested	Choke size	Oil prod. during test bbls.	Gas prod. during test MCF	Water prod. during test bbls.	Oil gravity ° API (Corr)			
Tubing pressure	Casing pressure	Cal'ated rate of Production per 24 hrs.	Oil bbls.	Gas MCF	Water bbls.	Gas-oil ratio			
Disposition of gas (state whether vented, used for fuel or sold):									
<p>CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the <u>Secretary</u> of the <u>SOUTHWEST SALT CO.</u> (company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.</p> <p style="text-align: center;"> <u>December 19, 1969</u> Date </p> <p style="text-align: center;">  Signature </p>									
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: left;"> Permit No. <u>527</u> </div> <div style="text-align: center;">  </div> <div style="text-align: right;"> <p>STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION</p> <p>Well Completion or Recompletion Report and Well Log</p> <p>File One Copy</p> </div> </div>									

(Complete Reverse Side)

PLUGGING RECORD

Operator Southwest Salt Co./Morton International, Inc.		Address 13000 W. Glendale Ave., Glendale, AZ 85307	
Federal, State, or Indian Lease Number or lessor's name if fee lease. Roach-Baker		Well No. 1	Field & Reservoir N/A
Location of Well 590 Ft N of S Line, 690 Ft. E of W Line, SW 1/4 Sec. 2, T2N, R1W, G&SRB&M		Sec-Twp-Rge or Block & Survey	County Maricopa
Application to drill this well was filed in name of Southwest Salt Company	Has this well ever produced oil or gas NO	Character of well at completion (initial production): Oil (bbls/day) N/A Gas (MCF/day) N/A Dry? N/A	
Date plugged: June 3, 1990	Total depth 815 Feet	Amount well producing when plugged: Oil (bbls/day) N/A Gas (MCF/day) N/A Water (bbls/day) N/A	
Name of each formation containing oil or gas. Indicate which formation open to wellbore at time of plugging	Fluid content of each formation	Depth interval of each formation	Size, kind & depth of plugs used. Indicate zones squeeze cemented, giving amount cement AZ OIL & GAS CONSERVATION COMMISSION JUL 6 1990
None			

CASING RECORD

Size pipe	Put in well (ft.)	Pulled out (ft.)	Left in well (ft.)	Give depth and method of parting casing (shot, ripped, etc.)	Packers and shoes
See attachments to Form No. 25 for pertinent details on the well and plugging.					
Was well filled with heavy drilling mud, according to regulations? N/A				Indicate deepest formation containing fresh water. N/A	

NAMES AND ADDRESSES OF ADJACENT LEASE OPERATORS OR OWNERS OF THE SURFACE

Name	Address	Direction from this well:
Roach and Baker Ranches	7033 N. Dysart, Glendale, AZ 85307	

In addition to other information required on this form, if this well was plugged back for use as a fresh water well, give all pertinent details of plugging operations to base of fresh water sand, perforated interval to fresh water sand, name and address of surface owner, and attach letter from surface owner authorizing completion of this well as a water well and agreeing to assume full liability for any subsequent plugging which might be required.

N/A

Use reverse side for additional detail.

CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the Director of Manufacturing-Evap. of the Morton International, Inc. (company) and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.

Date July 3, 1990

Signature [Signature]

Permit No. 527

Form No. 10

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION
Plugging Record
File One Copy

SUNDRY NOTICES AND REPORTS ON WELLS

1. Name of Operator Southwest Salt Co./Morton International, Inc.

2. OIL WELL ☐ GAS WELL ☐ OTHER ☒ (Specify) Solution Mining (Salt Brine)

3. Well Name Roach-Baker No. 1

Location SW 1/4 Section 690 Ft. East of West Line, 590 Ft. North of South Line

Sec. 2 Twp. 2N Rge. 1W County Maricopa, Arizona.

4. Federal, State or Indian Lease Number, or lessor's name if less lease Roach-Baker

5. Field or Pool Name N/A

6. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:			SUBSEQUENT REPORT OF:		
TEST WATER SHUT-OFF <input type="checkbox"/>	PULL OR ALTER CASING <input type="checkbox"/>		WATER SHUT-OFF <input type="checkbox"/>	MONTHLY PROGRESS <input type="checkbox"/>	
FRACTURE TREAT <input type="checkbox"/>	DIRECTIONAL DRILL <input type="checkbox"/>		FRACTURE TREATMENT <input type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>	
SHOOT OR ACIDIZE <input type="checkbox"/>	PERFORATE CASING <input type="checkbox"/>		SHOOTING OR ACIDIZING <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>	
REPAIR WELL <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>			ABANDONMENT <input checked="" type="checkbox"/>	
(OTHER) _____			(OTHER) _____		

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

7. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

The attached sheets detail the plugging and abandonment of Roach-Baker No. 1.

8. I hereby certify that the foregoing is true and correct.

Signed

[Signature]

Title

Director of Manufacturing - 7/3/90
-Evap.

Permit No. 527

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION
Sundry Notices and Reports On Wells
Form No. 25 File One Copy

Attachment to Form No. 25
State of Arizona
Oil and Gas Conservation Commission

Plug and Abandon - Actual
Roach-Baker No. 1 (Arizona Permit No. 527)
Glendale, Arizona

Roach-Baker No. 1 well (Arizona Permit No. 527) plugging and abandonment was completed on June 3, 1990 when cement was circulated to the surface. The following is the sequence of events leading to the successful plugging and abandonment.

May 16 - 22:

The 3-1/2" tubing inside the 5" main casing was removed to a depth of 796'. Significant difficulties were encountered due to the poor condition of both the 3-1/2" and 5" casings.

May 23, 24:

Swaging the 5" casing was required to get back to the 796' depth. The weak casing was collapsing in on the hole. A combination of bumping on the 3-1/2" tubing and milling allowed a depth of 840' to be attained. A combination of lost circulation while milling, slow progress, dangers of casing collapse and the fact that the anhydrite zone above the salt had been reached, led to the decision to stop milling activity at 840' and begin the plugging from there.

The hole was circulated (to the extent possible) to clean it out prior to logging and plugging.

May 30:

Schlumberger ran a CBL-VDL log on the well to determine the condition of the cement behind the 5" casing. The logging tool made a total depth of 820'. The CBL-VDL log is shown on Figure No. 1. Reasonably good cement is shown from T.D. to 700'. A gauge ring was run into the hole prior to setting a bridge plug at the bottom of the hole. The gauge ring stopped at 268'. An inflatable bridge plug was ordered to get past the tight spot.

May 31:

The inflatable bridge plug was set as deep in the hole as possible at 815'. Three feet of sand and 12' of Portland Type II neat cement slurry at a weight of 15.6 lb/gallon were

placed on top of the plug with a dump bailer. A schematic of the plugging of the well is shown on Figure 2.

June 1:

After waiting on the cement to harden overnight (an 8 hour minimum wait on cement was required), the cement was tagged at 800'. The lower section of casing was then perforated in the 2' zones at 777, 759 and 716' with 8, 8 and 11 perforating charges respectively. During the second perforating run, the 4" perforating gun would not go past a depth of 268' so the logger switched to string shots of perforators for minimum outside diameter. The tight area was swaged out again. Tubing was run in the hole and tagged cement at 800', also. Eleven and one-half sacks of cement slurry were pumped in to fill the inside of the 5" casing to 700'. Later in the day, the cement was tagged by wireline at 670' indicating more fill-up than expected. Tubing was run in to check the cement top. The tubing tagged at 672' and was punched down to 676' before stacking out. The cement appeared to be good. Some cement was in the threads of the bottom pin and the tubing string, proving the presence of cement.

June 2:

The 5" casing was perforated to allow cement to fill any voids behind the casing. A before and after casing collar locator (CCL) log was run to show where the perforations were made. The log is presented as Figure 3. Eight perforations in 2' intervals were centered on depths of 649, 580, 538, 460, 410 and 100'. Forty-seven sacks of Portland Type II neat cement slurry at 15.6 lb/gallon were pumped to fill the casing from 672 to 300'.

June 3:

The top of cement was tagged at 406', indicating that some of the cement went outside the casing. The drill hole and/or formation took about 13 sacks, (28%) of the cement placed on June 2.

Cementing resumed at 404' using 50 sacks of cement with 20% excess available to fill to the surface. With about 50 sacks of cement in the hole, good cement slurry came to the surface. The tubing was removed and cement slurry was put in to fill back to the surface. The cement filled the casing and did not fall back. About 8 sacks (16%) excess cement went into the drill hole and/or formation behind the casing during this lift. Cementing was now complete.

A picture of the identification placard placed on the well is shown on Figure 4. This marker will be coated to minimize corrosion and will be buried below the surrounding ground surface as approved by the A.O.G.C.C. due to the on-going nature of the business.

J. H. Huizingh
062890

ROACH-BAKER No. 1 AS PLUGGED

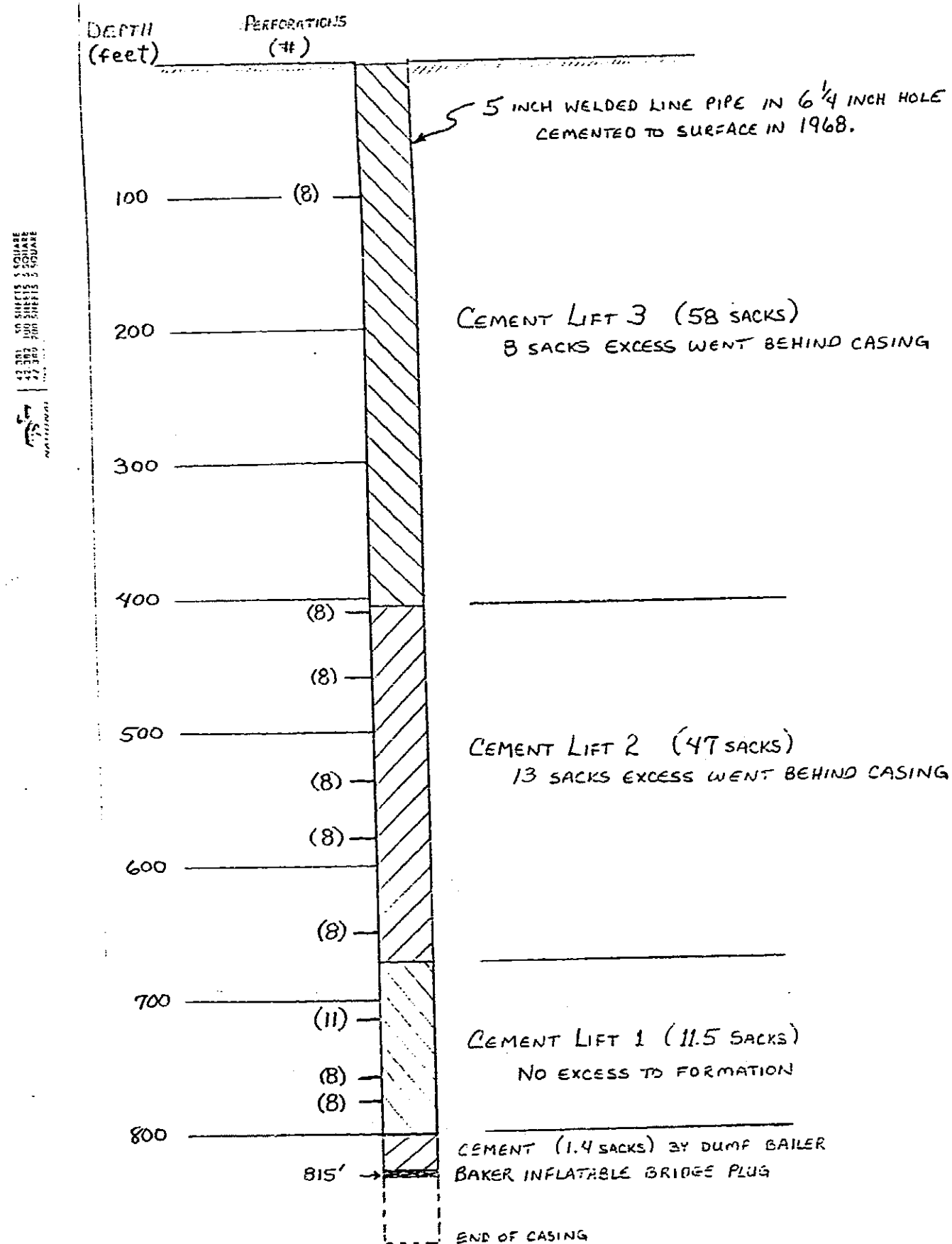
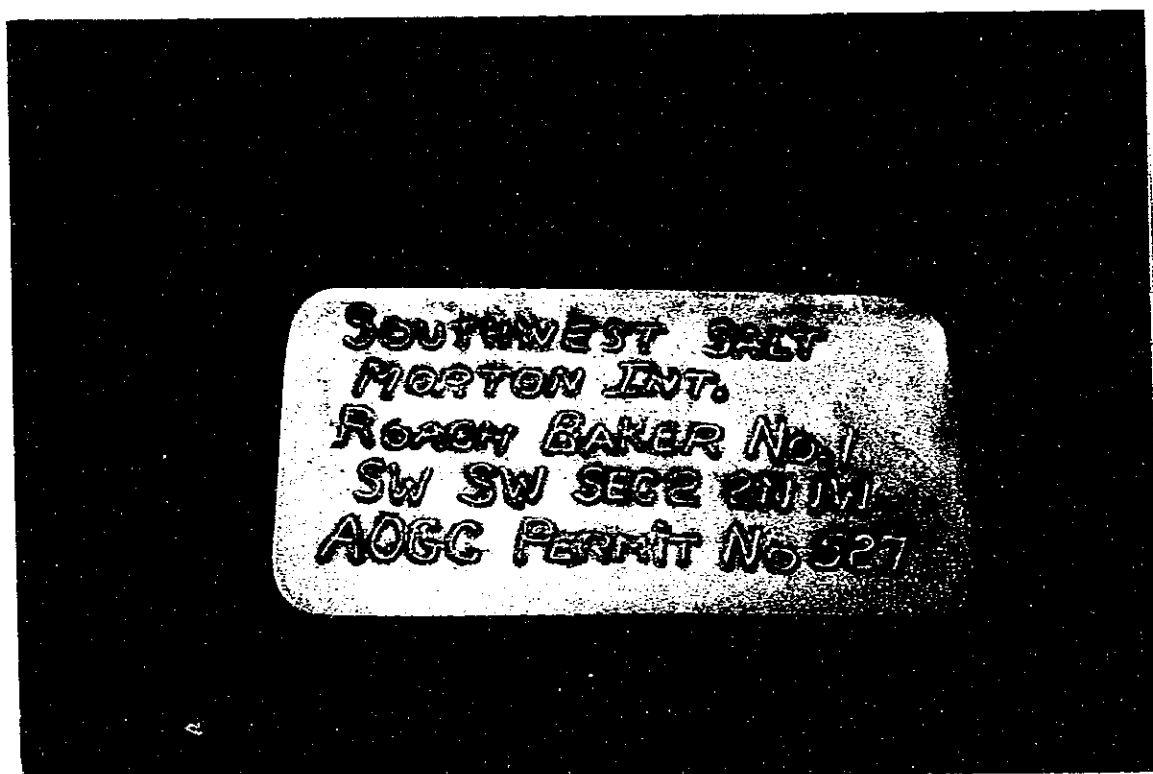


Figure 4



ABANDONED WELL MARKER FOR
ROACH - BAKER No. 1
GLENDALE, AZ. FACILITY

APPLICATION TO PLUG AND ABANDON

FIELD Roach Baker
 OPERATOR Southwest Salt Co. ADDRESS 13000 W. Glendale Ave. Glendale, AZ 85307
 Federal, State or Indian Lease Number _____ WELL NO. 1
 or Lessor's Name if Fee Lease _____
 LOCATION T2N, R1W, Sec. 2, SW ¼ Sec. 690 ft. East of West Line
590 Ft. North of South Line
 TYPE OF WELL Brine Production TOTAL DEPTH 4500 ft.
 (Oil, Gas or Dry Hole)
 ALLOWABLE (If Assigned) N.A.
 LAST PRODUCTION TEST OIL N.A. (Bbls.) WATER N.A. (Bbls.)
 GAS N.A. (MCF) DATE OF TEST N.A.
 PRODUCING HORIZON Luke Salt Deposit PRODUCING FROM 900 ft. TO 1500 ft.

1. COMPLETE CASING RECORD.

- 5½" casing set and cemented from surface to 880 ft.
- 3½ tubing set from surface to 1450 ft.

2. FULL DETAILS OF PROPOSED PLAN OF WORK.

See attached plugging plan.

DATE COMMENCING OPERATIONS May 2, 1990
 NAME OF PERSON DOING WORK United Drilling, Inc. ADDRESS P.O. Box 2488 Roswell, N.M. 88201
Barbie Drilling, Inc. 1008 E. Baseline, No. 845
Tempe, AZ 85283
 Signature [Signature]
 Title Facility Manager
 Address 13000 W. Glendale Ave. Glendale, AZ 85307
 Date 5-2-90

Date Approved May 7, 1990
 STATE OF ARIZONA
 OIL & GAS CONSERVATION COMMISSION

By: [Signature]

Permit No. 527

STATE OF ARIZONA
 OIL & GAS CONSERVATION COMMISSION
 Application to Plug and Abandon
 File Two Copies

Form No. 9

Plugging Plan for Roach-Baker #1
Revised by Morton Salt
January 16, 1990

For all cementing: cement will be Class A or B or Type 2. Cement may be purchased locally and mixed and pumped with rig equipment. It will be neat cement mixed with water and no other additions. Wait-on-cement time will be at least eight hours. After each stage of cementing, the top of the cement will be tagged. If the cement is hard, proceed to the next step; if top of cement is not found, repeat procedures as necessary until a hard cement plug is established.

Notification: The Arizona Oil and Gas Commission and the U.S. EPA will be notified one week in advance of the start of the work.

1. Clean up cement around 5-1/2" casing at surface and weld a wellhead in place in case a blow out preventer is needed.
2. Remove the 3-1/2" tubing down to 880' with the following plan:
 - A. Drill out the 3-1/2" tubing so that a cutter may be run to 880' and cut the tubing.
 - B. Cut tubing and remove with standard fishing tools.
 - C. Mill whatever tubing cannot be pulled.
3. Run a cement bond log to determine that the top of the cavity is below 880'. This is the bottom of the 5-1/2" casing on the top of the salt. If the top of cavity is higher than 870', Oil and Gas Commission will be notified; all expectations are that the cavity will be at 800' or below and we will be able to continue with the next step. If the bond log does not clearly indicate the top of cavern, another log type as determined by Morton Salt will be run.
4. Set a regular cast-iron bridge plug as low in the 5-1/2" casing as possible (approximately 870'). If the casing conditions and size are unknown, set an inflatable bridge plug. Using tubing, break circulation and clean hole. Place 10' to 20' of cement on plug.

5. Perforate 5-1/2" casing with eight shots per foot over a four foot section. This will be done at approximately 840' above the plug and as low as possible in the anhydrite confining zone above the salt. Eight shots per foot will probably be accomplished by two runs at four shots per foot.
6. Set packer at 700' and attempt to squeeze cement from 870' to just below 700'. If formation will not take squeeze fluid, fill with cement to just below 700'.
7. If the cement bond log shows uncemented volumes behind the 5-1/2" casing, consult the Commission Representative on-site on the number and location of perforations to fill this void and perforate accordingly. Also, consult the Commission and U.S. EPA Representatives for any perforations that are appropriate between 700' and 400' and perforate accordingly. Fill with cement to 400'. Wait at least eight hours for the cement to harden. Tag the top of the cement; if it has fallen back, refill to 400'. Repeat the filling, waiting, tagging, sequence until the casing is cemented to 400'.
8. If the cement bond log shows uncemented volumes behind the 5-1/2" casing above 400', consult the Commission and U.S. EPA Representatives on-site on the number and location of perforations to fill this void. The section above the fluid level will be perforated a couple of times just in case there are uncemented sections above this point. Fill with cement to surface. Wait at least eight hours for the cement to harden. If it has fallen back, refill to the surface. Repeat the filling and waiting sequence until the casing is cemented to the surface.
9. Cut off casing and install plugged well marker in accord with R12-7-127.

In the event of unexpected complications, the program will be revised as directed by the Commission and U.S. EPA Representatives on-site.

Arizona Salt Co., Well #1
 SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 2, T. 2 N., R. 1 W., G&SRM, Arizona
 Elev. KB 1090'

Sample Log

0-10	ss, lt brn, silt to crse gr, v poorly sorted, sparse mica, grn and gold, 99% qtz, poorly cemented w clay
10-20	same
20-30	lms, lt brn, argillaceous, arenaceous, crse grn (ss - 30%), tra mica
30-40	same, 15% ss
40-50	ss, lt brn, v crse to silt; some large grains of fe-mag schist, qtzite, calcite cemented siltstone grns, tra mica
50-60	same, more ss, much less lms
60-70	same as 0-10 except crse grained predominates
70-80	same
80-90	same, w more shale and siltst frags
90-100	same, larger gr size
100-10	siltstone, lt brn, calcite cemented, well sorted; tr ↓ qtz grns
10-20	same
20-30	same
30-40	same, more clay cement
40-50	same, more calcite cement
50-60	same, silt increase in med gr qtz and qtzite grns
60-70	same as 50-60, w lost circ material
70-80	same
80-90	same



527

190-200	same w increase of m.g. ss to 10%
200-210	same - siltstone w few larger grns
10-20	same as 190-200, more lost circ material ✓
20-30	same less lost circ material
30-40	same, lighter brn
40-50	siltstone, lt gry-grn, frly well sorted, calcite cem, scattered grns of blk org mater
50-60	same
60-70	same but cuttings of calc lt grn slightly silty mudstone appearing
70-80	mudstone, lt grn, calcareous, some silt
80-90	same
290-300	same, more lt brn siltstone (20%), more lost circ material
300-310	same
10-20	same, siltstone to 50%
20-30	same
30-40	same, siltstone 80%, slt increase in crse ss grns
40-50	siltstone, like 240-250 without organ mater
50-60	same w more med ss grns
60-70	same
70-80	same
80-90	same
390-400	same
400-410	same
10-20	same w a few crse to small pebble qtz and qtzite grns
420-30	same as 400-10

430-40	same, inc in lost circ material
40-50	same as 10-20, even more lost circ material
50-60	same, less lost circ material
60-70	same
70-80	same
80-90	same
490-500	same
500-510	same, slt inc in v.f.g. mat
10-20	same
20-30	same w crse grns also
30-40	same
40-50	same
50-60	same
60-70	same, lighter brn
70-80	same
80-90	same
590-600	same
600-610	same
10-20	same
20-30	same
30-40	same
40-50	same, a few grn and white shale frags
50-60	same as 30-40
60-70	same, few sm peb of qtzite
670-80	same w few grns of red-black, brittle, mottled material (Basalt - altered)

680-90	same, darker brn color
690-700	dark red-black-grn mottled grains of "70-80" predominant, in rounded frags from crse gr to v crse grn size
700-710	same, drk grns 80%
10-20	same, drk grns 95%
20-30	same, drk grns 55%
30-40	same
40-50	large grains (small pebble) of drk mat and qtzite 50-50
50-60	same
60-70	same, drk grains 70%
70-80	same, 55% drk grns
80-90	same
790-800	anhydrite
800-10	anhydrite 30-40% drk grns
10-20	same, drk grns 10%
30-40	all anhydrite, massive, sugary text
40-50	same
50-60	same
70-80	same
880-90	same [log shows salt (halite) top at 80; caliper shows salt dissolving in drilling fluid from 880 to around 1150 where apparently mud became saturated]
890-900	sample of combined material from up hole - no salt because salt dissolved
900-10	cavings and possibly remnant material from dissolved salt from here to T.D.
910-T.D. 4478'	salt (halite)

May 2, 1975

Memo from W. E. Allen

Re: Southwest Salt Company #1 Strat
SW/SW Sec 2-T2N-R1W
Maricopa County, Permit #527

Southwest Salt Company #2 Roach-Baker
NW/SW Sec 2-T2N-R1W
Maricopa County, Permit #548

This is in response to a letter sent to Ed Garthe, Environmental Health Services, from John Bannister. Von Roberts with the Health Services and Jerry Grott of Southwest Salt contacted me by telephone May 1, 1975. Roberts was going to meet with Grott on May 2 and Grott requested that I join them, which I did at 2 p.m. on May 2, 1975.

Our concern and the reason that John wrote Garthe was because of the prevalence of salt that had accumulated over a large section of the surface area of Southwest's operations.

Jerry told us that recent excavations on his premises disclosed a very dry deposit of sand some 15 feet below the surface of the ground. This is below a layer of caliche and clay that lies immediately above the surface. (All pits that are used have been treated to prevent seepage). If Grott's assertion that this deeper sand is extremely dry and powdery is correct, it would appear that no salt water is seeping downward to possibly contaminate the fresh water aquifer.

I brought up the possibility that the salt water could penetrate down to one of the fairly impermeable layers of caliche or clay and spread out laterally until it reached one of the many small fractures that lace this general area. Grott and Roberts were of the opinion that this was highly improbable. They also expressed the opinion that these were only surface fractures and did not reach a depth great enough to intersect the water bearing formation.

Roberts insisted that a program to monitor any intrusion of salt water into a fresh water strata would be time consuming and expensive. He was reminded that we had caused to be drilled and cased a number of holes around the perimeter of the ponds in order to monitor any migration of salt water into a deeper strata. Roberts showed no interest in this procedure except to say that he had no funds to investigate the possible pollution of fresh water caused by brine encroachment. He expressed the opinion that they would require a definite complaint from someone whose water was becoming

Page 2
W. E. Allen
Memo to File #527 & #548

salty before they could or possibly would complete an extensive investigation. I told him it would be too late at this point to prevent polluting the fresh water aquifer. He and Jerry both agreed to this statement.

At this point I was convinced that the Health Services had no real interest in monitoring Southwest Salt Company's operations and I made ready to leave. Roberts joined me and the meeting was terminated at 3:20 p.m.

WEA/rlb

STATE OF ARIZONA
30th LEGISLATURE
2nd REGULAR SESSION

SENATE

S.B. 1306
INTRODUCED
February 8, 1972

REFERENCE TITLE: Water Pollution - Monitoring Sources

Referred to	Date	Reported Out
Rules		
Committee of Whole		
3rd Reading	Aye	No
House Action		
Sent to Governor		

Introduced by Majority of Committee on Public Health and Welfare

AN ACT

RELATING TO PUBLIC HEALTH AND SAFETY; AUTHORIZING THE DEPARTMENT OF HEALTH TO REQUIRE MONITORING OF WATER POLLUTION SOURCES; PROVIDING FOR CONFIDENTIALITY OF RECORDS, AND AMENDING SECTION 36-1863, ARIZONA REVISED STATUTES.

1 Be it enacted by the Legislature of the State of Arizona:

2 Section 1. Purpose

3 The purpose of this act is to provide for monitoring of water
4 pollution sources.

5 Sec. 2. Section 36-1863, Arizona Revised Statutes, is amended
6 to read:

7 36-1863. Inspections and investigations; maintenance
8 of records; monitoring; confidentiality

9 A. The department or its duly authorized representative shall
10 have the power to enter at reasonable times upon any private or public
11 property which is the source of waste or is reasonably believed to be
12 the source of waste being discharged into waters of the state, and
13 the owner, managing agent or occupant of any such property shall permit
14 such entry for the purpose of inspecting and investigating conditions
15 relating to pollution or the possible pollution of any waters of the
16 state, and to have access to such records as the department may require
17 under subsection B of this section.

S.B. 1306

1 B. The department may require the maintenance of records relating
2 to the operation of disposal systems, and any authorized representative
3 of the department may examine and copy any such records or memoranda
4 pertaining to the operation of disposal systems. Copies of such records
5 shall be submitted to the department upon its request.

6 C. THE OWNER, LESSEE OR OPERATOR OF A SOURCE OF WASTES SHALL
7 PROVIDE, INSTALL, MAINTAIN AND OPERATE SUCH MONITORING DEVICES AS ARE
8 REASONABLE, NECESSARY AND REQUIRED TO DETERMINE COMPLIANCE IN A MANNER
9 ACCEPTABLE TO THE DEPARTMENT AND SHALL SUPPLY MONITORING INFORMATION
10 AS DIRECTED IN WRITING BY THE DEPARTMENT. SUCH DEVICES SHALL BE
11 AVAILABLE FOR INSPECTION AT ALL REASONABLE TIMES.

12 D. ANY RECORDS OR OTHER INFORMATION FURNISHED TO OR OBTAINED BY
13 THE DEPARTMENT CONCERNING ONE OR MORE SOURCES OF WASTE WHICH RECORDS
14 AND INFORMATION RELATE TO PRODUCTION OR SALES FIGURES OR TO THE PROCESSES
15 OR PRODUCTION UNIQUE TO THE OWNER OR OPERATOR, OR WHICH WOULD TEND TO
16 ADVERSELY AFFECT THE COMPETITIVE POSITION OF SUCH OWNER OR OPERATOR,
17 SHALL BE ONLY FOR THE CONFIDENTIAL USE OF THE DEPARTMENT IN THE ADMIN-
18 TRATION OF THIS CHAPTER, UNLESS SUCH OWNER OR OPERATOR SHALL EXPRESSLY
19 AGREE TO THEIR PUBLICATION OR AVAILABILITY TO THE PUBLIC. NO PROVISION
20 OF THIS SECTION MAY BE CONSTRUED TO PROHIBIT THE APPROPRIATE GOVERNMENTAL
21 AGENCY FROM PUBLISHING QUANTITATIVE AND QUALITATIVE STATISTICS PERTAINING
22 TO THE DISCHARGE OF WASTES.

lud 2

Nov 3-27-72

item 310



OFFICE OF

Oil and Gas Conservation Commission
STATE OF ARIZONA

██████████ 4515 NORTH 7th AVE.
██████████ PHOENIX, AZ. 85013
Phoenix, Arizona 85007
PHONE: 271-5161

527

January 13, 1971

M E M O

Attached is the list of all the participants that attended the meeting on January 12, 1971, in Tucson to discuss the problem of subsidence within the State of Arizona.

527

5



OIL AND GAS CONSERVATION COMMISSION
STATE OF ARIZONA

5

Date 1-12-70

Hearing, Case No. _____

Motion of _____

Subsidence Area

Name	Representing	Address
John Bonacker	Oil & Gas	4515 N 7th Ave, Phoenix
F. C. Ryan	Land Dept	1424 W Adams Pl
Carol Kinicki	Ariz. Highways Dept	1739 W Jackson St, Phoenix
Leon Estus	Maricopa County Highways Dept	3301 W. Durango Phoenix
Lee Conrley	Conservation Office	1100 W. Washington St, Phoenix
Phil Briggs	Az Interstate System Comm	Suite 207, 34 W Monroe, Phoenix
H. M. Beech	U.S. Geological Survey	Box 4270, Tucson, Ariz.
James Delight	Dept. of Transportation	32413. Greengate Rd, Mesa
William W. Bull	Geographical Dept	322-A Technology Bldg, Mesa
David L. Evans	U.S. Geological Survey	206 W. Psychology Bldg
M. E. Allen	OGC Comm	1515 N. 4th Ave, Phoenix
H. Wesley Force	USOP and Bureau Mines	Tucson, Ariz. - Box 29 Mines
H. K. Gashin	Geological Survey, U.S. A.	1100 W. Adams, Tucson

October 6, 1970

Memo from John Bannister

Memo to: Southwest Salt Company#1 State
SW/4 SW/4 Sec. 2-T2N-R1W
Maricopa County
Our File #527

John Savoy telephoned this date at 2 p.m. to advise that Southwest Salt Company intended to drill a new well for mining purposes. A permit will be submitted in the near future and they are, at this time, getting a bond issued. A survey of the location of the well will be forwarded in the near future. Inasmuch as this is not an oil and gas well, I verbally gave permission that the survey could come in, if necessary, at a date somewhat later than normally.

The above well is to be plugged and abandoned. I instructed Savoy to see that Grott contacted this office prior to any ~~any~~ plugging operations being commenced so that a proper and safe plugging procedure could be worked out.

September 22, 1970

Memo from W. E. Allen

Memo to Southwest Salt #1 Strat
SW/4 SW/4 Sec. 2-T2N-R1W
Maricopa County
Our File #527

Southwest Salt Company Water Well #1

John Bannister informs me that he has had a conversation with Herb Schumann, Dr. Qashu, and Wes Peirce regarding the plugging of this well. According to John, Qashu and Schumann are in agreement to plugging this well when and if it is to be considered a total loss hole. Until such time as Mr. Grott decides that he has no further use for this well, Schumann and Qashu are of the opinion that there isn't any danger in contaminating the fresh water zone at the present time.

July 8, 1970

Memo from W. E. Allen

Memo to Southwest Salt Company #1 Strat
SW/4 SW/4 Sec. 2-T2N-R1W
Maricopa County
Our File #527

Discussed the Southwest Salt Company's well with Herb Schumann. He had said that the operators had experienced some difficulty (mechanical); however, he wasn't aware of the extent of the trouble. Herb ~~EXIINN~~ told me that Jerry Grott had indicated that he might want to convert the well to a fresh water well.

We discussed the methods that might be utilized to protect the fresh water sands in the hole at some length. Herb agreed with our suggestion of squeezing the formation below these sands and then plugging the hole with cement if it wasn't to be used for a fresh water well.

July ⁹ 8, 1970

Memo to Southwest Salt Company #1 Strat
SW/4 SW/4 Sec. 2-T2N-R1W
Maricopa County
Our File #527

Memo from W. E. Allen

Jerry Grott was in the office this a.m. ~~HW~~ We had a lengthy discussion regarding his entire operation, particularly the well and the trouble he has experienced. Jerry gave me a somewhat different account of the happenings leading up to their trouble than I had received from Phil Messke. The end results were essentially the same, however.

Mr. Grott told me that they were preparing to drill another well very shortly. I told him that I was aware of that; and, that we had sent him a letter dated July 8, 1970, advising him what steps he must take to comply with our rules and regulations and the laws of the State of Arizona before he started operations. He told me that he was aware of this procedure and had recently discussed all this with John Bannister at which time John told him to go ahead as soon as he had the well plat and complete the rest of the paperwork as soon as he could, i.e., bond, permit, etc. I reminded him that all this was required for drilling operations before they were started and Jamie gave him the necessary forms.

I questioned Jerry about his plans to convert the #1 well to a water well. He said he would like to do this; however, the ~~WM~~ hole size would not permit the use of a pump of sufficient size to produce the required volume of water.

We then discussed the plugging of the well. Jerry seemed to be in accordance with our recommendations to set a plug in the lower part of the casing, perforate and squeeze the formation below the fresh water sands, and then fill the pipe with cement. Even though we went over this procedure several times, I got the impression that Jerry didn't completely understand the mechanical features involved in the squeeze operation.

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Page 2
Memo to Southwest Salt #1 Strat
Permit #527
July 8, 1970

From Jerry's conversation I received the impression that Phil Meeske was no longer involved in this operation. However, Jerry didn't make a statement to this effect directly.

My two-hour visit with Jerry was very cordial and he ~~is~~ seemed very willing to cooperate with the Commission.

July 6, 1970

Memo to Southwest Salt Company #1 Strat
SW/4 SW/4 Sec. 2-T2N-R1W
Maricopa County
Our File #527

CONFIDENTIAL

Memo from W. E. Allen

I visited with Phillip F. Meske the supervisor in charge of this operation. We discussed the mechanical trouble that they were experiencing on their well. Mr. Meske definitely is of the opinion that the tubing was bent and not stuck. His reasons appear to be valid. The following is a brief description of what Mr. Meske related to me: The brine content in the produced fluid from the well ~~XXXXXX~~ began to decline. The saturation point was down to 70% or lower. This was in February of this year. It was decided to pull tubing to see if there was a hole in the tubing. The tubing could not be raised or lowered. Drifts were run in the tubing on a wire line. The lowest point ~~XXXXXX~~ reached was approximately 960'. The tubing was cut at this point and pulled from the hole, leaving some 1200' in the well. Some difficulty was experienced in pulling the lower end of the tubing through the bottom of the casing. After retrieving the 960' of tubing, a drift was run in the casing. Indications were that the extreme lower end of the casing was bent or collapsed. The bottom 20' of the casing was cut off and presumably went to the bottom of the hole. Tubing was again run in the hole at approximately 960'. Obstruction was encountered. The obstruction appeared to be hard metallic substance; however, no impression block was run to establish the fact that this was tubing. By working the tubing, they managed to lower it another approximately 600'. Some difficulty was experienced during this lowering operation. With approximately 1400' of tubing in the hole, the pump was connected and pumping operations were resumed. The return fluid carried no brine so the tubing again was pulled.

Page 2
Memo to File #527 from W. E. Allen
July 6, 1970

CONFIDENTIAL

Upon pulling the pipe this time, it was discovered that a collar had split leaving some 600' of additional pipe in the hole. The tubing was re-run to just below the bottom of the casing; however, no brine was recovered.

From Meske's recounting of the operation there is now approximately 1200' of tubing in the hole from the original string, a 20' section of 6" casing, and an additional 600' of tubing from the second run. This is quite a bit of iron to be in one hole especially in three or more separate pieces.

When I reached the well location there was a small cable tool rig ~~XXX~~ rigging up on this hole. Mr. Meske said that they were going to pull the tubing but he didn't know what course of action would be pursued. While at this operation Mr. Meske and I checked on the fault and also checked the trench that has been cut at right angles to the fault. There seemed to be no evidence of further movement of this fissure in the direction of the settling ~~XXXXX~~ ponds. The trench did show a small amount of fracturing; however, this could be caused from dehydration of the exposed formation within the trench.

There is evidence that the company is building two additional rapid evaporation pits above ground. These pits are formed with 2 by 12 timbers and are approximately 180' by 28' by 2'. ~~XXXXX~~ They are located side by side with an approximate 6' return duct between the two main pits. The pits will be lined with a polyurethane lining sprayed on. The one end of these pits will have a gas fire heater and fan. The brine will be pumped immediately below this open flame. The fan will serve to aerate the fluid causing a rapid evaporation of the liquids. The fluid can be recirculated in these pits. Meske indicated that if and when they drilled another well they would drill a much larger diameter hole and probably set 10" casing some 300' in the salt section.

I requested Mr. Meske to keep me ~~XXXXX~~ informed of his progress.

July 3, 1970

Memo to File #527
Southwest Salt Company #1 Strat
SW/4 SW/4 Sec. 2-T2N-R1W
Maricopa County

CONFIDENTIAL

Memo from James Scurlock

Telephoned Mr. Phil Meske today at the plant site. They are currently trying to raise money to drill another brine hole which is to be located about 1050' directly north of the present hole. This new well would be located on the north burm of pit #1 (the southwestern most pit), and about 20' from the irrigation ditch which runs along the western edge of the property. They are currently doing no work as they are trying to raise money. The new hole they anticipate will be larger in diameter and they will set larger casing.

They have had a lot of mechanical difficulty with the first hole. As I understand it, the brine was not sufficiently concentrated so the operator pulled the tubing in order to check for leaks and in finding no leaks in the tubing, they decided to lower the tubing about 500' deeper; that is, to a depth of about 2000'. In resetting the casing, operator now believes that instead of reaching the 2000' depth, they probably managed to collapse several hundred feet of tubing within the cavity because they were unable to pull the tubing. At this point the operator blasted the tubing into and pulled tubing. On re-entering the hole again, operator found that they could only reach a depth of about 950' where they encountered fish (old metal tubing).

Operator is trying to raise capital/by selling stock. Their impression is that with the condition of the brine hole, they would have difficulty in selling stock at this point. Instead they/selling production payments.
not
are

OPERATOR REQUESTS THAT THESE PROBLEMS BE KEPT CONFIDENTIAL.

October 23, 1969

Memo to the Jerry Grott Salt Pollution File

Memo from James Scurlock, Geologist

Mr. Grott was in the office today. He and Mr. Norman Eagleton of Eagleton Engineering, Houston, Texas, are negotiating an agreement whereby a lease belonging to Mr. Grott in Section 1, T19N, R25E, Apache County, consisting of 403 acres, approximately, and lying north of the river is to be made available on such terms as would allow Eagleton to drill a well to the salt in order to wash out a cavity to be used for storage of LPG Gas.

Mr. Grott said that they would hope to find a section of about 100 feet of salt. Mr. Grott would market the salt much of which would go into uranium refining in the Grants area. The LPG Gas would be transported in by truck from Gallup and Farmington and would be stored here during the off season and ~~XX~~ thence to the west coast market during the winter.

They intend to drill a water well in the river gravels to a depth of 150 to 250 feet. They think that they would need about 250 gallons per minute.

October 15, 1969

Memo to the Jerry Grott File
From James Scurlock, Geologist

At the meeting yesterday at the well site (see enclosed clipping) the following people were present:

Glenn Hebert (Civilian Engineer representing Luke)
H. H. Schumann (U.S.G.S.)
John Bannister (Oil & Gas Conservation Commission)
James Scurlock (Oil & Gas Conservation Commission)
Fritz Ryan (State Land Department)
Joseph Orb (State Health Department)
Jerry Grott (Southwest Salt Company)
Bill King (Arizona Republic)
Wes Peirce (Arizona Bureau of Mines)
Major Hancher plus four others from Luke Air Force Base
Art Bodine (Irrigation District)
G. Parkman (Goodyear Farms)
G. W. Bressey (?) (Goodyear Farms)
Bert Thoressex (?) (U.S.G.S.)
Hank Kaymond (ED7)
Forrest Stroup (?)

Mr. Grott (rhymes with rot) gave what I thought was a very convincing talk regarding the completion of the well. His thorough knowledge of the salt business was evident. By mixing water and clay with various amounts of salt, he demonstrated to the group the method in which he is building up the hard pan (seal) in the evaporating ponds which are now being prepared. Mr. Grott has done a lot of work with clays as a student of MIT (where he received his Master's Degree) and, as a matter of fact, I believe, has done some consulting work in clay properties doing original scientific research in this area. Mr. Grott described the chemistry that takes place between sodium ions of the brine and the molecular structure of the clay molecule which results in a very marked reduction in permeability of the clay.

Page 2
October 15, 1969
Memo to the Jerry Grott File
James Scurlock

The hard pan seal which he is building on the bottom of the evaporating pits is to be about ten inches thick consisting of a gradation from wet clay at the bottom overlain by a layer of slightly salty mud which in turn is overlain by a layer of muddy salt and then finally all of this overlain by a hard layer of the salt crystals. The effectiveness of this technique is apparently well known and documented.

My impression was that his explanation was well received by the group. There was some talk about the feasibility of drilling a monitor well in the area of the evaporating pits to a depth of about three hundred feet in such a way that the fresh water aquifer which lies at this depth could from time to time be measured for salinity and for height of water table. These factors, we were told by Mr. Herb Schumann (U.S.G.S.), would provide evidence that the evaporating pits were sufficiently well sealed so as to prevent contamination of this fresh water aquifer. The thinking here is that since from time to time the farmers in this area are beset by water problems involving salinity, that in all probability they would be inclined to blame Mr. Grott's salt operation for their trouble. Thus, it is my feeling that Grott may be well advised to drill at least one of these monitoring holes (which will cost about \$2,000 to drill and complete) in order to provide for his own defense in any possible litigation which may arise.

I am convinced that there is little or no risk involved in producing the brine inasmuch as Grott has the well cased off properly. (See diagram). Thus, contamination of the fresh water aquifers could occur only through a possible seepage from the evaporating pits.

Mr. Grott pointed out that the ponds would not represent a nuisance to the community by way of odors or mesquito breeding. The imbankments around the ponds are too high (about thirty inches) to allow waves to wash over into the surrounding fields.

17

527

Page 3
October 15, 1969
Memo to the Jerry Grott File
James Scurlock

It is planned that the ponds (which cover about twenty-five acres) would contain about ten to fifteen inches of water; that is, they would be about half full.

The Southwest Salt Company expects to capture about 50,000 tons per year of the local salt market, which runs about 75,000 tons per year. At a flow rate of 100 gallons of brine per minute and figuring about 2-1/2 pounds of salt per gallon, this would produce approximately 54,500 tons of salt per year.

Mr. Grott has been cooperative in furnishing well information to us.

Officials check pollution in operation of salt mine

By BILL KING

GLENDALE — Jerry Grott's confidence that his salt mine poses no pollution threat to surrounding wells was questioned yesterday by some officials as he led them on a tour of his Glendale Avenue and Dysart Road operations.

Engineers from Luke Air Force Base, immediately to the west, expressed fear big earth cracks in the area could "open a pipeline" into base wells for brine. Grott plans to pump from his Southwest Salt Co. underground rock-salt bed.

Grott retorted that the base located its wells contrary to competent advice. He said they will be "shot" by natural encroachment of salt from geological beds in the area, whether his company operates or not.

"I resent that," Glenn Hebert, civilian engineer from Luke, told Grott. "Our wells have limited capability. That's all."

Grott said his company's 25 acres of brine-evaporating ponds for livestock salt are laid out in such manner that he expects any earth cracks to straddle the ponds instead of running through them.

But H. H. Schumann, U.S. Geological Survey authority here on earth fissures, said he has seen them occur closer together than Grott expects them.

Growers dependent on irrigation wells in the vicinity also indicated interest in the fissure problem as they accompanied Schumann and others on the tour.

Grott told them there will be no seepage from his firm's evaporating ponds because they are being lined with a secret, patent-applied-for mix of water-compacted clays topped with solidified salt frosting. He said the ponds should be completed in two months.

"How do you know this won't start leaking in six months or a year?" asked John Bannister, executive secretary of the State Oil and Gas Conservation Commission, which polices well drilling where salt pollution threatens.

Grott replied that a field test of the actual pond lining probably could be set up to demonstrate its seepage resistance. He also suggested maintaining test wells around or even in the ponds with monitoring devices to warn of any seepage through the lining.

Interest in exploring this idea further was expressed by Joseph Obr, the State Health Department's water pollution control director, and James Scurlock, geologist for the oil and gas commission.

Schumann indicated, however, that a test well would reveal salt saturation

only if sunk over 300 feet to the fresh-water table. Monitoring shallower test wells could be tricky, with many unknowns involved, he suggested.

Bannister said he will recommend to his state commission that watching the ponds for escaping pollution should be left to the health department.

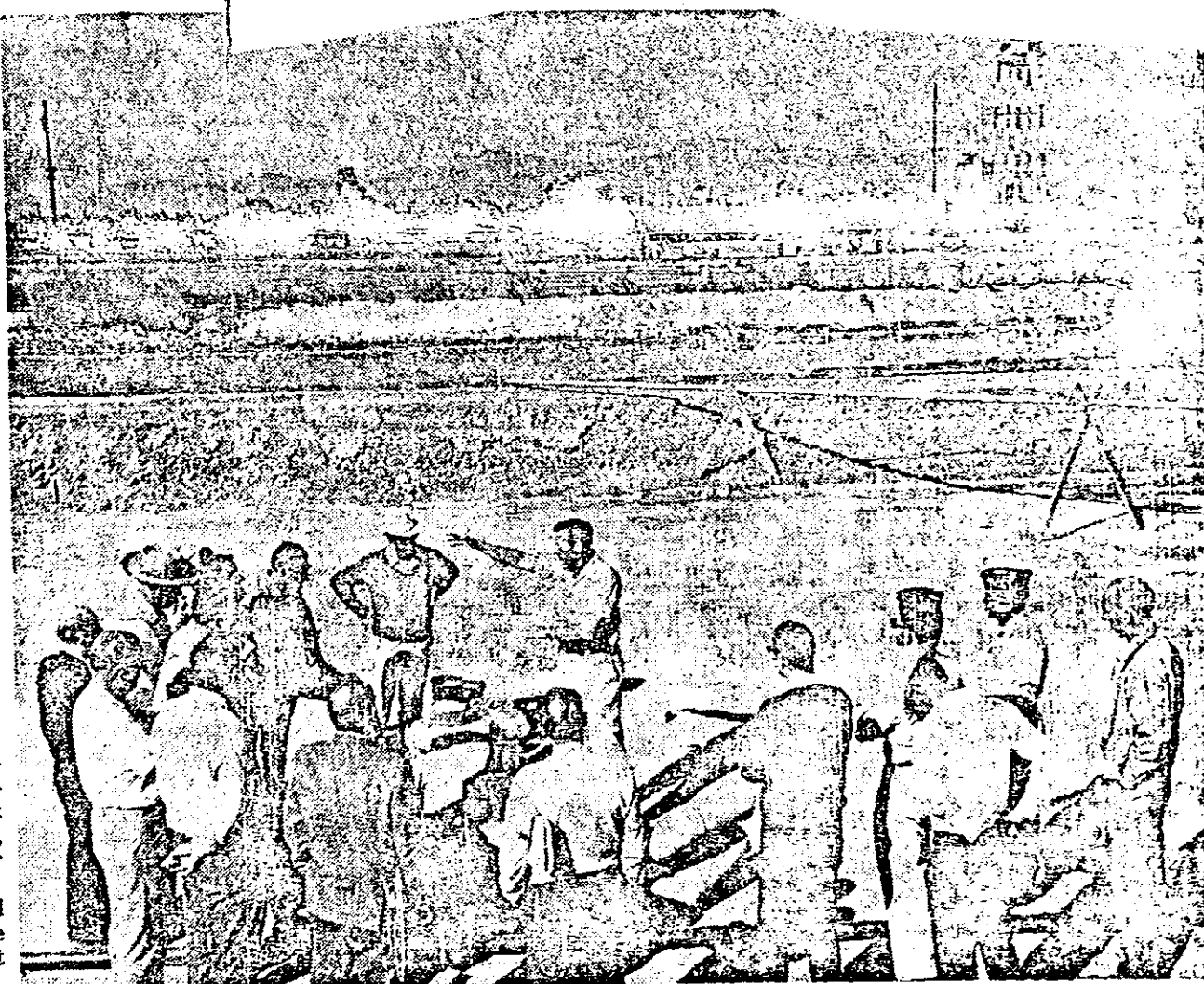
His commission, he said, would supervise the 4,500-foot hole which Southwest has drilled and cased into its salt bed so that it can be injected with water to make brine.

Grott expressed confidence he can show the state land and water commissioner there should be no objection to drilling the water well for his mine as a reasonable and beneficial use of water.

Luke AFB officials said their well water supply will be diminished by withdrawals from Southwest's well. But Grott said competition cuts both ways, since base wells help exhaust the water available to surrounding private lands.

Grott said he believes some official reservations about his firm's project are inevitable because the officials must protect the public.

He said yesterday's tour was the first of many contacts he expects with them in an effort to assure them of satisfactory progress by Southwest.



Jerry Grott, Southwest Salt Co. board chairman, pointing at center, explains firm's mining operations to public officials and farmers concerned about surrounding wells. Luke AFB is in background.

SOUTHWEST SALT #1
2-2N-1W MAR

MEMORANDUM

To: State Land Commissioner

From: F. C. Ryan

Subject: Letter 10-2-69, Vice Commander, Luke Field
Re: Saltwater Pollution hazard presented by
proposed salt mining operation.

Date: October 6, 1969

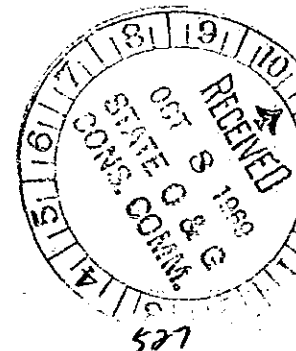
The contents of the attached copy of a letter from the Vice-Commander of Luke Air Force Base under date of October 2, 1969, serve to point up and bring into focus a problem which has concerned the Department greatly during the past few years - - the pollution-potential of salt beds situated in pump-irrigation farm areas.

The fears expressed by Colonel Marcum are well-founded. On the other hand, the facts known to this office indicate that the principals involved in the proposed mining facility are well aware of the dangers involved and, I am led to believe, are also aware of their responsibilities to the common good.

Granted that the mining operators intentions are the very best, it occurs to me that under the circumstances it is mandatory that the State take every measure possible to insure the protection of the potable water supplies and irrigation water supplies in the area. In this regard, I am of the opinion that the statutory authority of the Oil and Gas Conservation Commission provides that Agency with the sole mechanics necessary to regulate and control this type of salt mining operation in such manner as to provide all possible protection to the fresh water aquifer, and consequently the potable water supply of, particularly, Luke Air Force Base.

Contained in the Oil and Gas Commission's basic statutory authority, and at ARS 27-501,20, is the definition of "well" as used in that Statute. The definition follows:

" 'Well' means and includes any hole drilled or spudded in for the purpose, with the intention, or under the representation of penetrating oil or gas bearing strata, or of penetrating any strata in search of stratigraphic data pertinent to the location of oil or gas bearing strata, whether or not in either case, oil or gas is actually discovered. The commission may, as it shall deem to



State Land Commissioner
Re: Saltwater Pollution
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10/6/69

be to the best interests of the state, determine that any hole drilled or spudded in shall be included within the above definition to the extent necessary for the administration and enforcement of the rules required by § 27-516. The determination of the commission shall be final in any circumstance involving the question of purpose, intent or representation provided such determination shall be subject to appeal as provided by § 27-526."

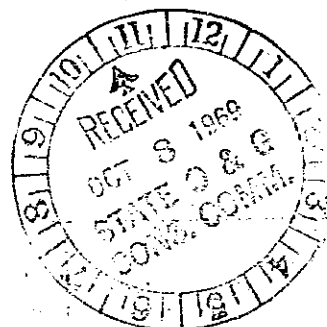
The underlined portion of the definition is self-explanatory. The referenced Section 27-516 is entitled, "Rules and Regulations." In that Section is stated the fact that the Commission shall make Rules and Regulations deemed necessary for the proper administration and enforcement of the Oil and Gas Conservation Statute to include the requirement on its part that drilling, casing, and plugging of wells shall be done in a manner to prevent, "pollution of fresh water supplies by oil, gas, or salt water."

✓ In view of the potential dangers and of the apparent means of statutory protection, I would recommend that you strongly urge the Governor to request the State Oil and Gas Conservation Commission to assert its authority in this instance, so that any holes involved in the proposed mining operation will be brought under the regulatory powers of a State Agency to the common best interests of this State.

FCR/lb

Attached (1)

[Signature]
F. C. R.



State Land Commissioner
Re: Saltwater Pollution
Page 2
10/6/69

be to the best interests of the state, determine that any hole drilled or spudded in shall be included within the above definition to the extent necessary for the administration and enforcement of the rules required by § 27-516. The determination of the commission shall be final in any circumstance involving the question of purpose, intent or representation provided such determination shall be subject to appeal as provided by § 27-526."

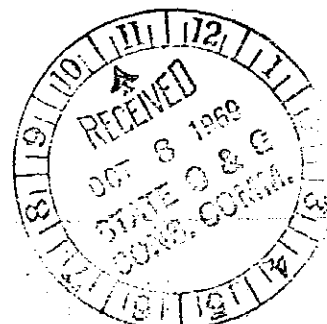
The underlined portion of the definition is self-explanatory. The referenced Section 27-516 is entitled, "Rules and Regulations." In that Section is stated the fact that the Commission shall make Rules and Regulations deemed necessary for the proper administration and enforcement of the Oil and Gas Conservation Statute to include the requirement on its part that drilling, casing, and plugging of wells shall be done in a manner to prevent, "pollution of fresh water supplies by oil, gas, or salt water."

✓ In view of the potential dangers and of the apparent means of statutory protection, I would recommend that you strongly urge the Governor to request the State Oil and Gas Conservation Commission to assert its authority in this instance, so that any holes involved in the proposed mining operation will be brought under the regulatory powers of a State Agency to the common best interests of this State.

FCR/lb

Attached (1)

F. C. R.



OIL & GAS CONSERVATION COMMISSION
STATE OF ARIZONA
1624 WEST ADAMS - SUITE 202
TELEPHONE 271-5161
PHOENIX, ARIZONA, 85007

October 6, 1969

Memo to File
From James Scurlock, Geologist

Southwest Salt Company
#1 Salt Test
SW/4 Sec. 2-2N-1W
Maricopa County, Arizona
Ground Elevation 1085'

Operator is Mr. Gerald J. Grott of Coolidge. His telephone number in Coolidge is 723-3885. Attorneys for Mr. Grott are George Hill and John Savoy. Their Phoenix telephone number is 258-7523.

Well was supported by El Paso Natural Gas Company.

Schlumberger Logs:
Sidewall Neutron Porosity
Compensated Formation Density
Dual Induction Laterolog

Total depth according to the driller was 4503'.
Total depth according to the logger was 4469'.
Logged on 11-28-68. Size of the hole 6-1/4".

Well was drilled on a very sharp gravity anomaly which was surveyed and published by the U.S.G.S. for the Bureau of Reclamation in 1968 (Bouger Geophysical Map of Part of Maricopa, Pima, Pinal and Yuma Counties of Arizona. Geophysical Investigation Map, GP 615, U.S.G.S., 1968).

The top of the Anhydrite Cap at approximately 800'. The top of the Halite salt at approximately 880'. Lithology consisted of Halite throughout the remainder of the section down to total depth, broken only at a few places with very thin partings of clay.

Well was drilled to a depth of about 3000' at which point El Paso Natural Gas Company, (Dick Ulrich, Farmington, New Mexico) offered to give financial support. El Paso is looking for gas storage in this area which would be most convenient for them inasmuch as they have a gas line running nearby. Reportedly they want to excavate about 10 million tons of Halite in order to create an underground cavity for gas storage. Mr. Grott intends to reclaim the Halite to be marketed locally.

We understand that Dr. Wes Peirce, Arizona Bureau of Mines, has been involved in this operation as a consulting geologist. Also, a Mr.

527

50

Page 2
October 6, 1969
Memo to File from James Scurlock

Herb Schumann, U.S.G.S. in Phoenix, has acted as an adviser to Mr. Grott on the well. Mr. Schumann has informed us that the Luke Air Force Base people* are concerned about the possibilities of salt contamination in their water wells which are located nearby. Mr. Schumann reports that one of these water wells was drilled to a depth of about 975' and encountered the salt at about the same depth as Grott's well; that is, about 880'. The well was plugged back for a successful completion at about 600' (?). The second water well then was drilled to about 600'. Apparently, the saline water has been seeping into both of these water wells contaminating them to some extent, thus, the fear by the Luke Air Force officials that Grott's operation may further contaminate these water wells.

Mr. Schumann could not give me the casing record of the Grott well; however, he was inclined to think that Mr. Grott had set casing well down into the Anhydrite Cap in such a way as to prevent contamination of any aquifers. Schumann reports that there may well be some surface cracks in the area of the Grott well, cracks which he believes are associated with the slight subsidence in this area due to ground water withdrawal. He feels that the Grott well is probably cased in such a way as to present no problem of contamination of potable waters through production of brine; but, seems to feel that evaporation pits will have to be watched closely and sealed properly so that the evaporating brines cannot seep down into the aquifers through these ground cracks or fissures.

The Commission is not, at this point, officially involved in this matter; however, the Commission will be represented on Monday, October 13, at 9 a.m. when the following people will meet to hash this whole problem over at the well site located at the intersection of Dysart Road and West Glendale. The following are to be present: Mr. Gerald J. Grott; Major Hancher, Base Engineer, Luke Air Force Base; Mr. Herb Schumann, U.S.G.S., Phoenix; Dr. Wes Peirce, Arizona Bureau of Mines; and Jim Scurlock.

* The Luke Air Force Base Vice Commander is Colonel E. L. Marcum. His telephone number is 935-7411 on the Base.

507

Page 3
October 6, 1969
Memo to File from James Scurlock

3:30 p.m.

Telephone conversation with Mr. Grott. He informs us that the well was drilled to total depth with a 6-1/4" bit. Six-inch casing was set at 880' with 130 sacks of cement (cement was circulated).

As previously reported in past editions, a major amount of salt was located in the Salt River Valley, near Luke A.F.B. Southwestern Salt Company is the new company, formed to be the commercial producer of this deposit, which is located about seven miles west of the community of Glendale. Gerald J. Grott, of Coolidge, is Chairman of the Board and the Chief Executive Officer. Other major officers of the Company are: Philip Meeske, Litchfield Park, President; John E. Savoy, Phoenix, Secretary; and Norwin L. Dixon, Coolidge, Treasurer.

The Salt is being produced by solution techniques and brine reclamation at the surface. Work is being done through a 6 inch well in the deposit. Actual production began this past week. Details of the exploration of the Salt Dome can be found in previous issues of this report.

527

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 4510TH COMBAT SUPPORT GROUP (TAC)
LUKE AIR FORCE BASE, ARIZONA 85301



OFFICE OF THE COMMANDER

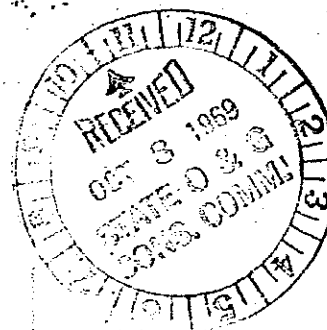
SUBJECT: Water Wells and Salt Beds

2 October 1969

TO: Mr. O. B. Lassen
Arizona State Land Department
1624 W. Adams
Phoenix, Arizona 85007

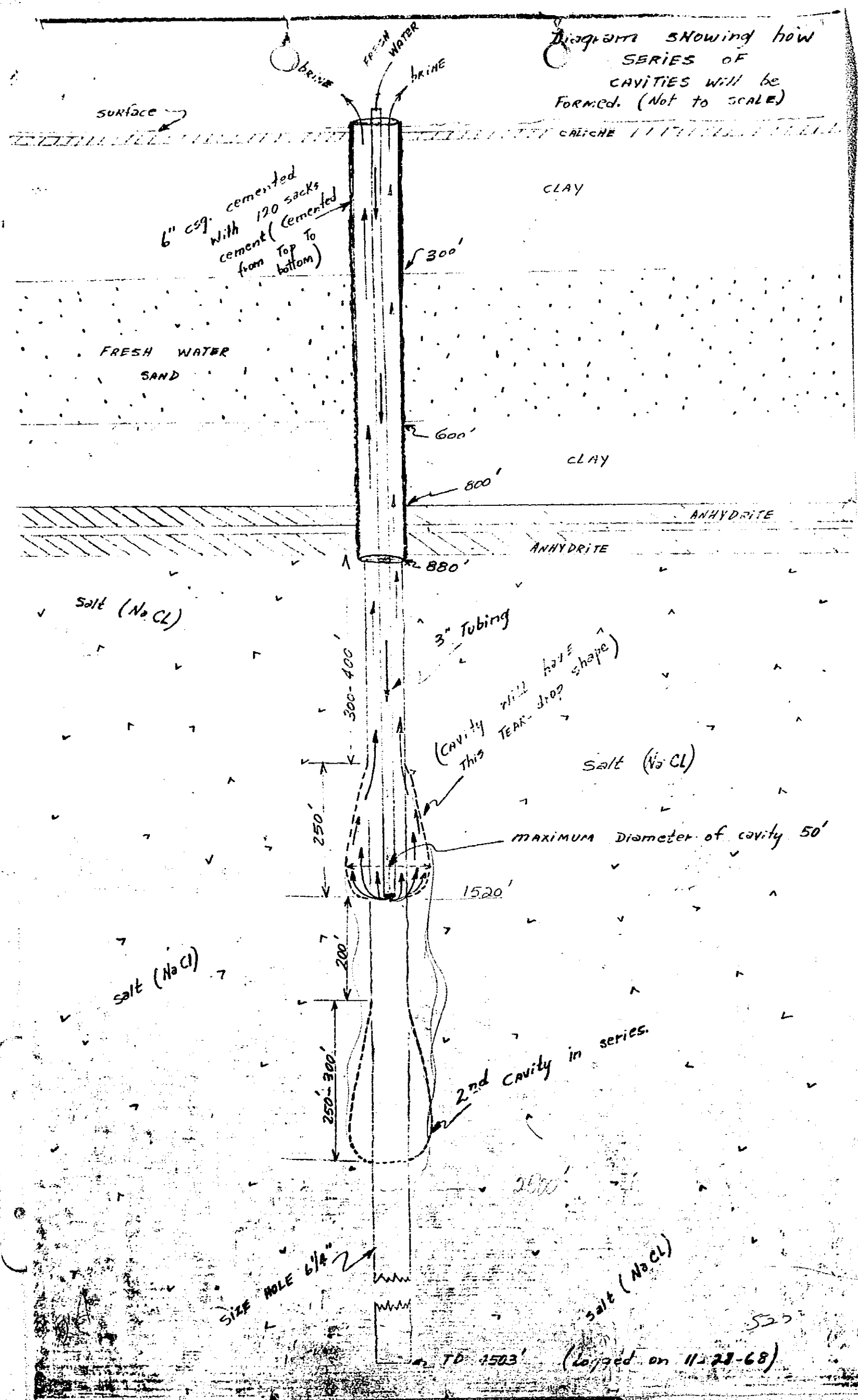
1. The base is concerned about the impact the proposed commercial salt mining facility, adjacent to Dysart Road and Glendale Avenue, will have on our potable water supply. All potable water for the base is obtained from a series of wells that seem to derive their water from a common source.
2. Past experience shows that when adjacent irrigation wells are heavily pumped, the water table in some of our wells will drop as much as 15 feet. The two wells located on our eastern boundary next to the Luke Elementary School have been most affected. One of these wells is presently inoperable until the bowls can be lowered. Our primary concern is the effect any new well production will have on our existing wells and the possibility of salt water contamination that might occur in our present potable water supply.
3. It should be noted that the ground subsidence we have incurred in this area might permit seepage and contamination that would not normally be expected. Request your comments and assurance that this commercial facility will have no detrimental impact on our potable water supply.

E. L. Marcum
E. L. MARCUM, Colonel, USAF
Vice Commander



507 21

Diagram showing how
SERIES OF
CAVITIES will be
FORMED. (Not to scale)



MEMO: FILE
FROM: J. SCURLOCK

12-16-68

Re: Jerry Grott Well — *ARIZONA SALT Co.*
T2N, R1W, G & SRM
Sec. 2: SW/4 SW/4
Maricopa County, Arizona
No permit
700' FWL - 400' FSL
Total Depth: 4502

Well encountered salt at 880'. Halite salt from 880 to 4502. Have logged well; Schlumberger from Farmington. We will be getting logs. Mr. Grott has drilled this well with the dry hole contribution from El Paso Natural Gas in order to ascertain whether enough salt might be provided here for the cattle industry. Plans are to dissolve the underground salt and to recover the salt by means of concentrated ponds, perhaps using solar ponds, evaporating ponds, or some kind of heating method may be devised to hasten the evaporation of the brine in the concentrating ponds.

El Paso is interested in developing underground storage for gas. The plan now is to investigate the feasibility of producing 2½ million tons of salt. Operators are in hopes that some exotic salts such as lithium chloride might be recovered from these brines.

Set 5 9/16 inch casing at 880 feet with 120 sacks of cement (set by Halliburton).

* Operators say that this Halite section is relatively clean with a few shale partings and clay partings, but essentially Halite throughout the thick section. He explained that the location was picked on the strength of a magnetic survey in here which showed a very pronounced and sharp anomaly which is reminiscent of the Piercement Salt Domes on the Gulf Coast.

Contractor on this hole was J. O. Barnes of Casa Grande. Rotary rig. Size of hole 6 5/8 inch at total depth. Well drilled with salt saturated mud.

Contact Jerry Grotts at telephone: 258-7523

Geologist -- Lefty Morris
(El Paso -- Farmington)

Permit
527

APPLICATION FOR PERMIT TO DRILL OR RE-ENTER

APPLICATION TO DRILL ☐

RE-ENTER OLD WELL ☐

SOUTHWEST SALT CO.

NAME OF COMPANY OR OPERATOR

Post Office Box 1237, Litchfield Park

Arizona

Address

City

State

J. O. Barnes

Drilling Contractor

Casa Grande, Arizona

Address

DESCRIPTION OF WELL AND LEASE

Federal, State or Indian Lease Number, or if fee lease, name of lessor

Roach-Baker Partnership

Well number

1 Salt

Elevation (ground)

1085

Nearest distance from proposed location to property or lease line:

555

feet

Distance from proposed location to nearest drilling, completed or applied—for well on the same lease:

feet

Number of acres in lease:

360

Number of wells on lease, including this well, completed in or drilling to this reservoir:

one

If lease, purchased with one or more wells drilled, from whom purchased:

Name

Address

Well location (give footage from section line) Sec. 2

555' N of SSL, 743' E of WSL T2N, R1W, G&SRB&M

Dedication (Comply with Rule 105)

-0-

Field and reservoir (if wildcat, so state)

County

Maricopa

Distance, in miles, and direction from nearest town or post office

3 Miles NE by N or Litchfield Park, Arizona

Proposed depth:

4500

Rotary or cable tools

Rotary

Approx. date work will start

Bond Status

Amount \$5,000.00

Organization Report

On file

Or attached

X

Filing Fee of \$25.00

Attached

X

Remarks:

CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the Secretary of the

SOUTHWEST SALT CO.

(company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.

Signature

December 19, 1969

Date

Permit Number:

527

Approval Date:

1-26-70

Approved By:

John Bannister

Notice: Before sending in this form be sure that you have given all information requested. Much unnecessary correspondence will thus be avoided.

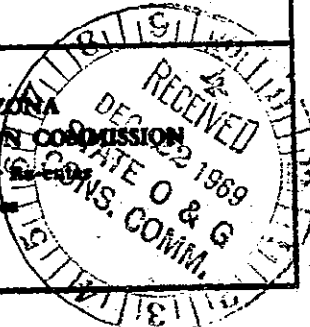
Form No. 3

(Complete Reverse Side)

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION

Application to Drill or Re-enter

File Two Copies



1. Operator shall outline the dedicated acreage for both oil and gas wells on the plat.
2. A registered professional engineer or land surveyor registered in the State of Arizona or approved by the Commission shall show on the plat the location of the well and certify this information in the space provided.
3. All distances shown on the plat must be from the outer boundaries of the Section.
4. Is the Operator the only owner in the dedicated acreage outlined on the plat below? YES _____ NO _____
5. If the answer to question four is "no," have the interests of all the owners been consolidated by communitization agreement or otherwise? YES _____ NO _____ If answer is "yes," Type of Consolidation _____
6. If the answer to question four is "no," list all the owners and their respective interests below:

Owner	Land Description

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 25%; height: 60px;"></td><td style="width: 25%; height: 60px;"></td><td style="width: 25%; height: 60px;"></td><td style="width: 25%; height: 60px;"></td></tr> <tr><td style="height: 60px;"></td><td style="height: 60px;"></td><td style="height: 60px;"></td><td style="height: 60px;"></td></tr> <tr><td style="height: 60px;"></td><td style="height: 60px;"></td><td style="height: 60px;"></td><td style="height: 60px;"></td></tr> <tr><td style="height: 60px;"></td><td style="height: 60px;"></td><td style="height: 60px;"></td><td style="height: 60px;"></td></tr> </table>																	<p style="text-align: center;">CERTIFICATION</p> <p>I hereby certify that the information above is true and complete to the best of my knowledge and belief.</p> <p>Name _____</p> <p>Position _____</p> <p>Company _____</p> <p>Date _____</p> <p>I hereby certify that the well location shown on the plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.</p> <p>Date Surveyed _____</p> <p>Registered Professional Engineer and/or Land Surveyor _____</p> <p>Certificate No. _____</p>

0 330 660 990 1320 1650 1980 2310 2640 2000 1500 1000 500 0

PROPOSED CASING PROGRAM

Size of Casing	Weight	Grade & Type	Top	Bottom	Cementing Depths	Sacks Cement



PERMIT TO DRILL

This constitutes the permission and authority from the

OIL AND GAS CONSERVATION COMMISSION,
STATE OF ARIZONA,

To: SOUTHWEST SALT COMPANY
(OPERATOR)

to drill a well to be known as

SOUTHWEST SALT COMPANY #1 STRAT
(WELL NAME)

located 554' 707'
555' FSL - 745' FWL

Section 2 Township 2N Range 1W, MARICOPA County, Arizona.

The NONE of said
Section, Township and Range is dedicated to this well.

Said well is to be drilled substantially as outlined in the attached Application and must be drilled
in full compliance with all applicable laws, statutes, rules and regulations of the State of Arizona.

Issued this 20 th day of JANUARY, 19 70.

Not Applicable

Prior to being produced, to produce this well
you must be in full compliance with Rule
106, Section 1, Article 18, Constitution, with respect
to the product to be produced.

OIL AND GAS CONSERVATION COMMISSION

By

John Kannerster
EXECUTIVE SECRETARY

PERMIT N^o 527

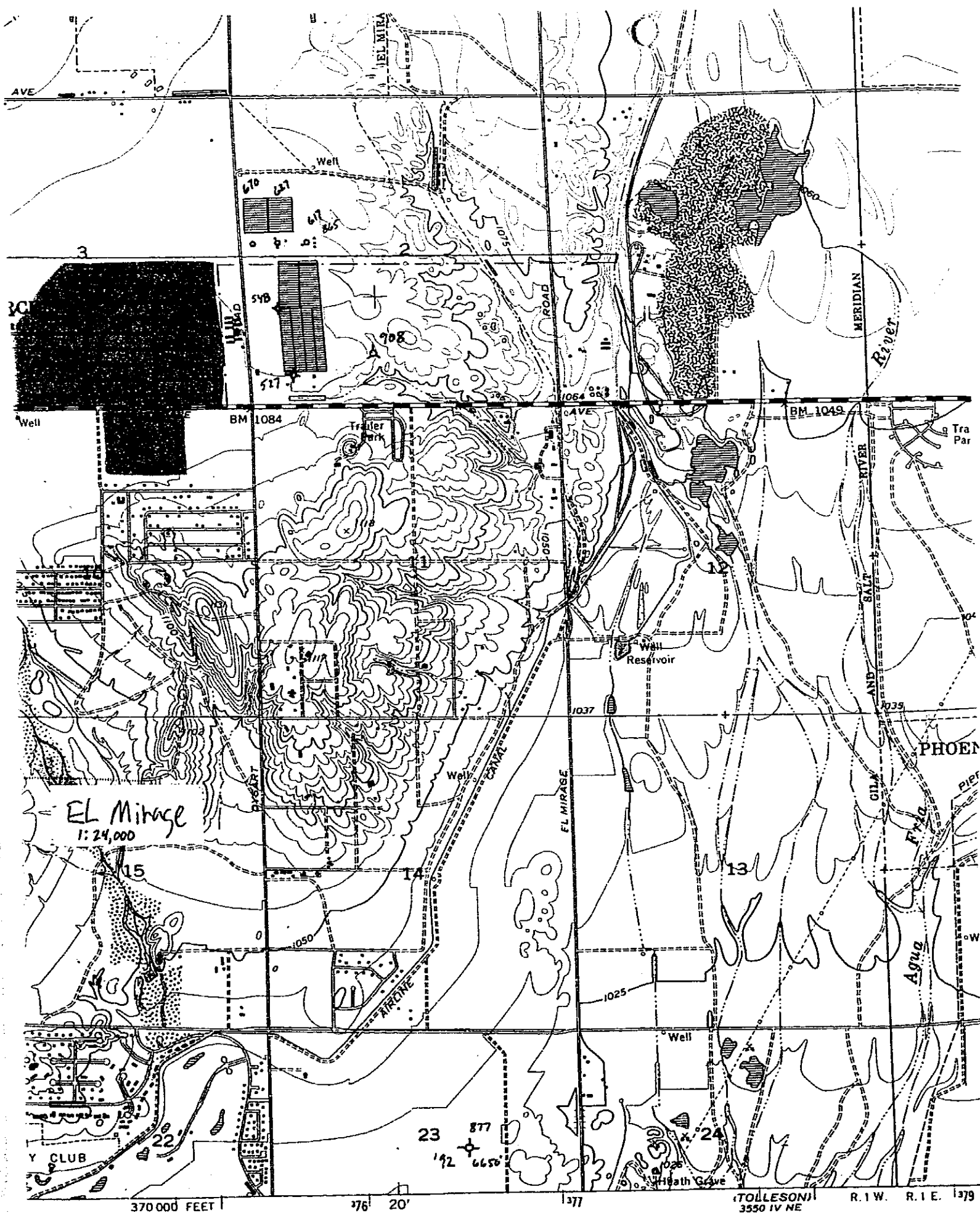
RECEIPT NO. 2861
API NO. 02-012-20001

State of Arizona
Oil & Gas Conservation Commission

Permit to Drill

FORM NO. 27

SAMPLES ARE REQUIRED



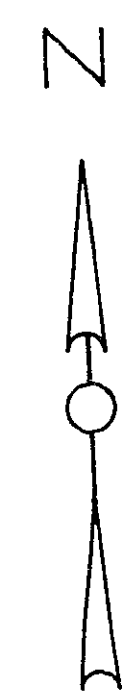
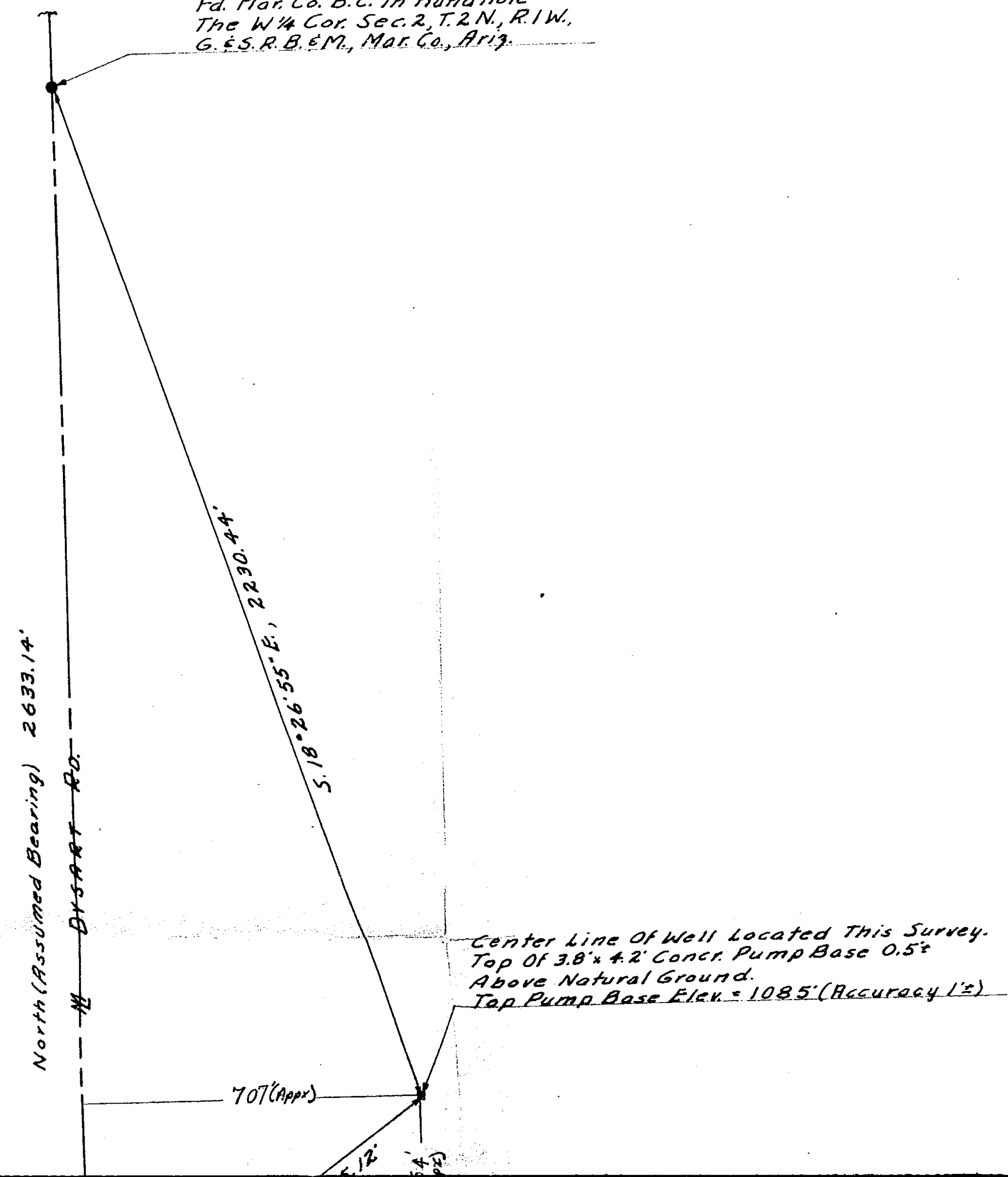
Survey

4/15
4/16

REPORT OF SURVEY
FOR
SOUTHWEST SALT COMPANY
P.O. Box 1237, LITCHFIELD PARK, ARIZONA

Fd. Mar. Co. B.C. In Hand hole
The W 1/4 Cor. Sec. 2, T. 2 N., R. 1 W.,
G. & S. R. B. & M., Mar. Co., Ariz.

Showing the location of a well situated in the S.W. 1/4, S.W. 1/4, Sec. 2,
T. 2 N., R. 1 W., G. & S. R. B. & M., with the S.W. Cor. of the above said
Sec. 2 bearing S. 53° 45' 40" W., 875.12 feet and the W. 1/4 Cor. of the
above said Sec. 2 bearing N. 18° 26' 55" W., 2230.44 feet from the center
of the above said well. The basis of the herein recited bearings being
North (Assumed Bearing), 2633.14 feet from the S.W. Cor. Sec. 2 to the
W. 1/4 Cor. Sec. 2.



Scale, 1" = 200'

CERTIFICATION: This will certify that the
field work for the survey shown hereon
was done under my supervision on Jan 8, 1990.
Ernest V. Kelly

11/11/21/13

4/15
4/16

REPORT OF SURVEY
FOR
SOUTHWEST SALT COMPANY
P.O. Box 1237, LITCHFIELD PARK, ARIZONA

Showing the location of a well situated in the S.W. 1/4, S.W. 1/4, Sec. 2, T. 2 N., R. 1 W., G. & S. R. B. & M., with the S.W. Cor. of the above said Sec. 2 bearing S. 53° 45' 40" W., 875.12 feet and the W. 1/4 Cor. of the above said Sec. 2 bearing N. 18° 26' 55" W., 2230.44 feet from the center of the above said well. The basis of the herein recited bearings being North (Assumed Bearing), 2633.14 feet from the S.W. Cor. Sec. 2 to the W. 1/4 Cor. Sec. 2.

Fd. Mar. Co. B.C. in Handhole
The W 1/4 Cor. Sec. 2, T. 2 N., R. 1 W.,
G. & S. R. B. & M., Mar. Co., Ariz.

5.18° 26' 55" E., 2230.44'

Center Line Of Well Located This Survey.
Top Of 3.8' x 4.2' Concr. Pump Base 0.5'
Above Natural Ground.
Top Pump Base Elev. = 1085' (Accuracy 1')

707 (Appx)



Scale, 1" = 200'

CERTIFICATION: This will certify that the
field work for the survey shown hereon
was done under my supervision on Jan 8, 1940.
Engineer J. J. Kelly

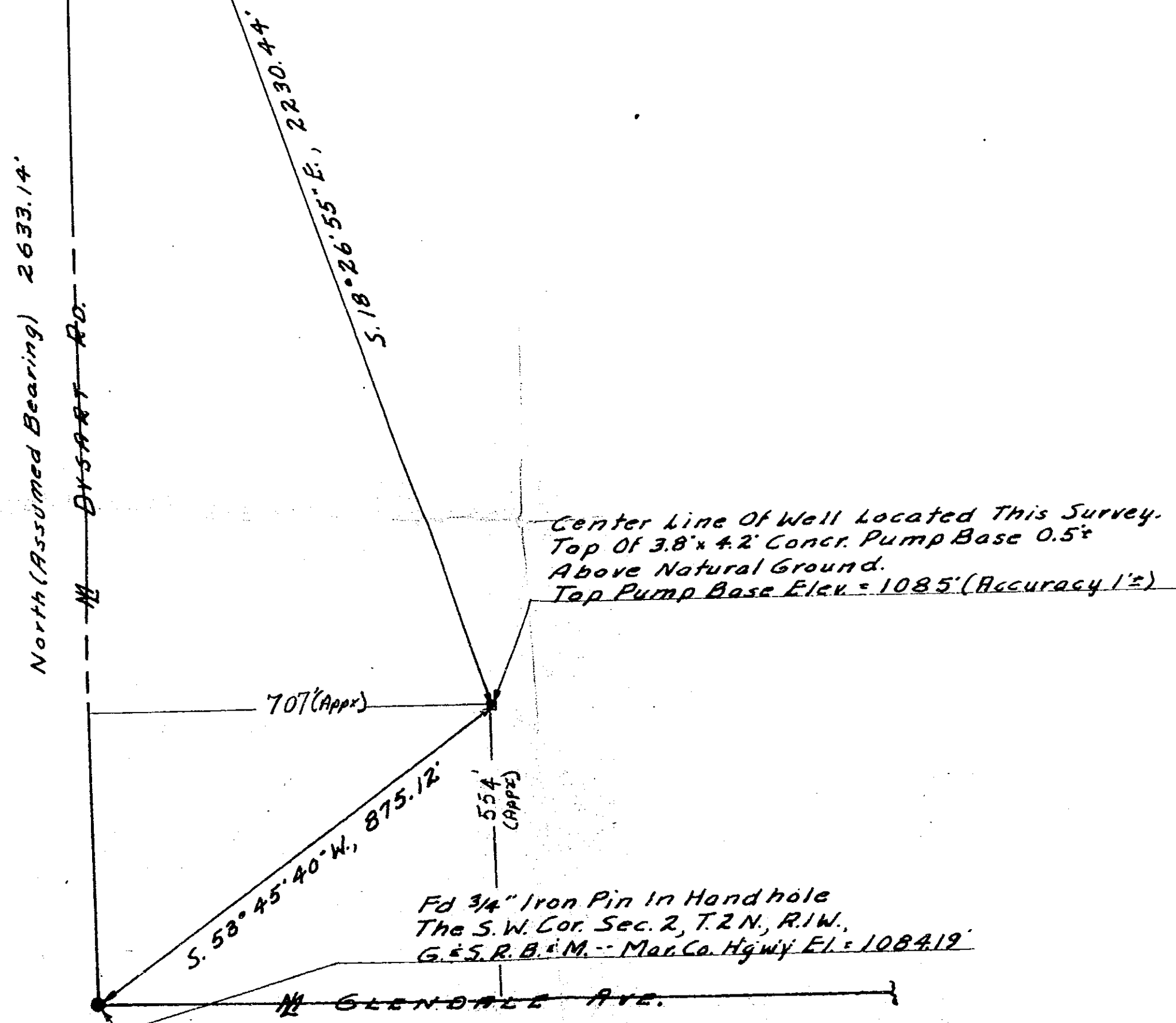
North (Assumed Bearing) 2633.14'
Desert Rd.

SOUTHWEST SALT #1
SW 2-2N-1W MARI

Fd. Mar. Co. B.C. in Handhole
The W 1/4 Cor. Sec. 2, T. 2 N., R. 1 W.,
G. & S. R. B. & M., Mar. Co., Ariz.

REPORT OF SURVEY
FOR
SOUTHWEST SALT COMPANY
P.O. Box 1237, LITCHFIELD PARK, ARIZONA

Showing the location of a well situated in the S.W. 1/4, S.W. 1/4, Sec. 2
T. 2 N., R. 1 W., G. & S. R. B. & M., with the S.W. Cor. of the above said
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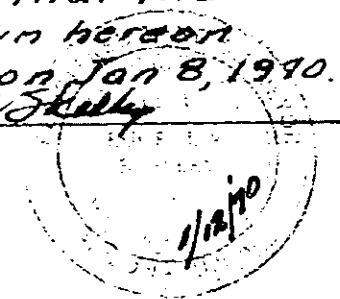


N



Scale, 1"=200'

CERTIFICATION: This will certify that the
field work for the survey shown hereon
was done under my supervision on Jan 8, 1990.
Engineer J. Kelly



ARIZONA SURVEYING SERVICE
2802 W. SOLANO DR., N. PHOENIX, ARIZONA
DRAWING NO. L-70-1569

Fd. Mar. Co. B.C. In Handhole
The W 1/4 Cor. Sec. 2, T. 2 N., R. 1 W.,
G. & S. R. B. & M., Mar. Co., Ariz.

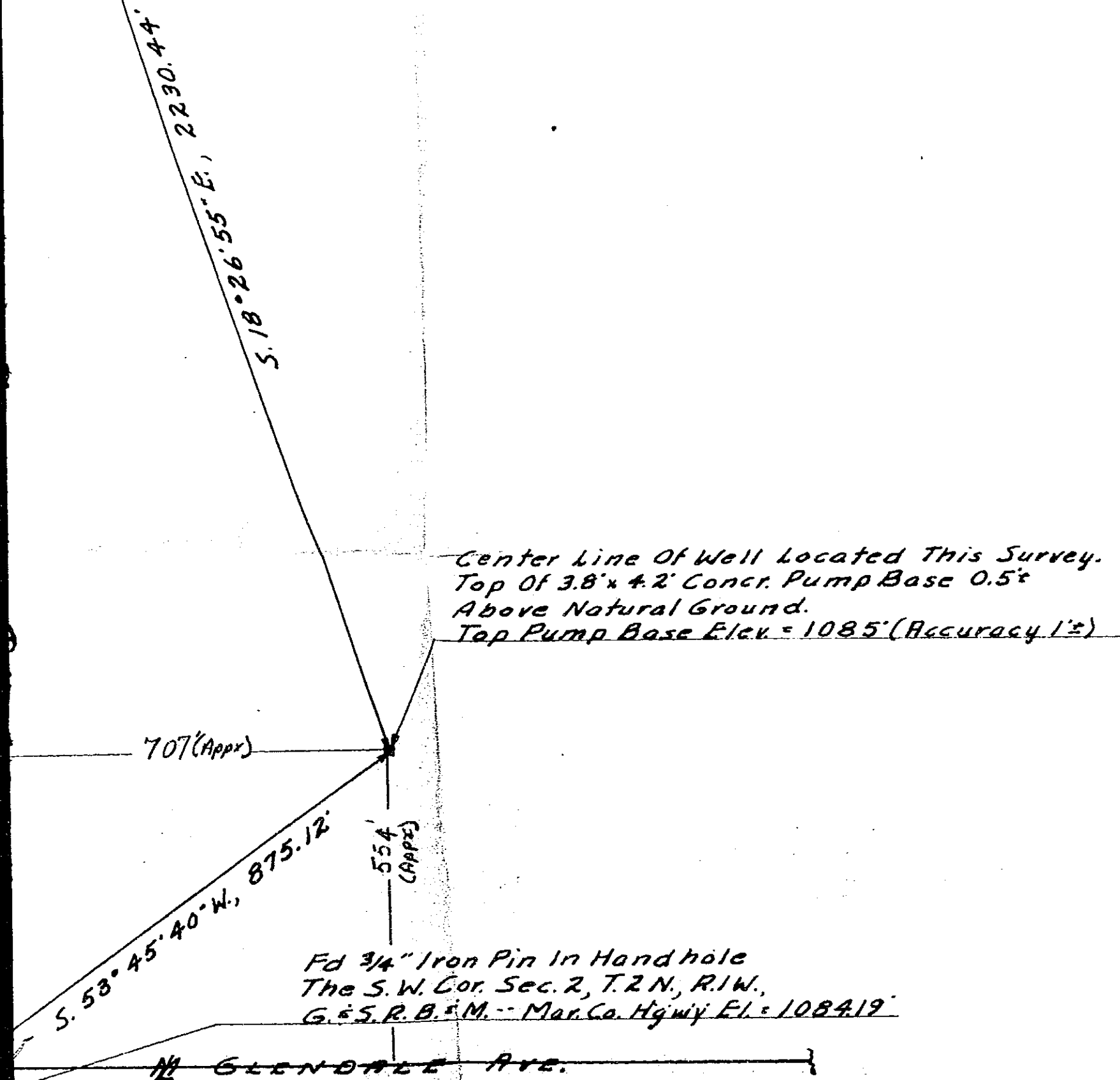
REPORT OF SURVEY

FOR

SOUTHWEST SALT COMPANY

P.O. Box 1237, LITCHFIELD PARK, ARIZONA

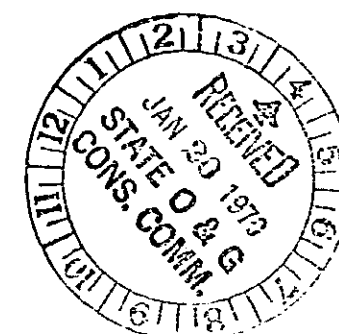
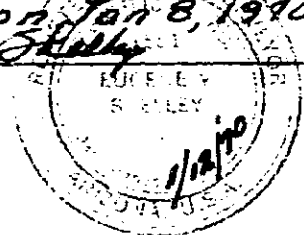
Showing the location of a well situated in the S.W. 1/4, S.W. 1/4, Sec. 2,
T. 2 N., R. 1 W., G. & S. R. B. & M., with the S.W. Cor. of the above said
Sec. 2 bearing S. 53° 45' 40" W., 875.12 feet and the W. 1/4 Cor. of the
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North (Assumed Bearing), 2633.14 feet from the S.W. Cor. Sec. 2 to the
W. 1/4 Cor. Sec. 2.



N

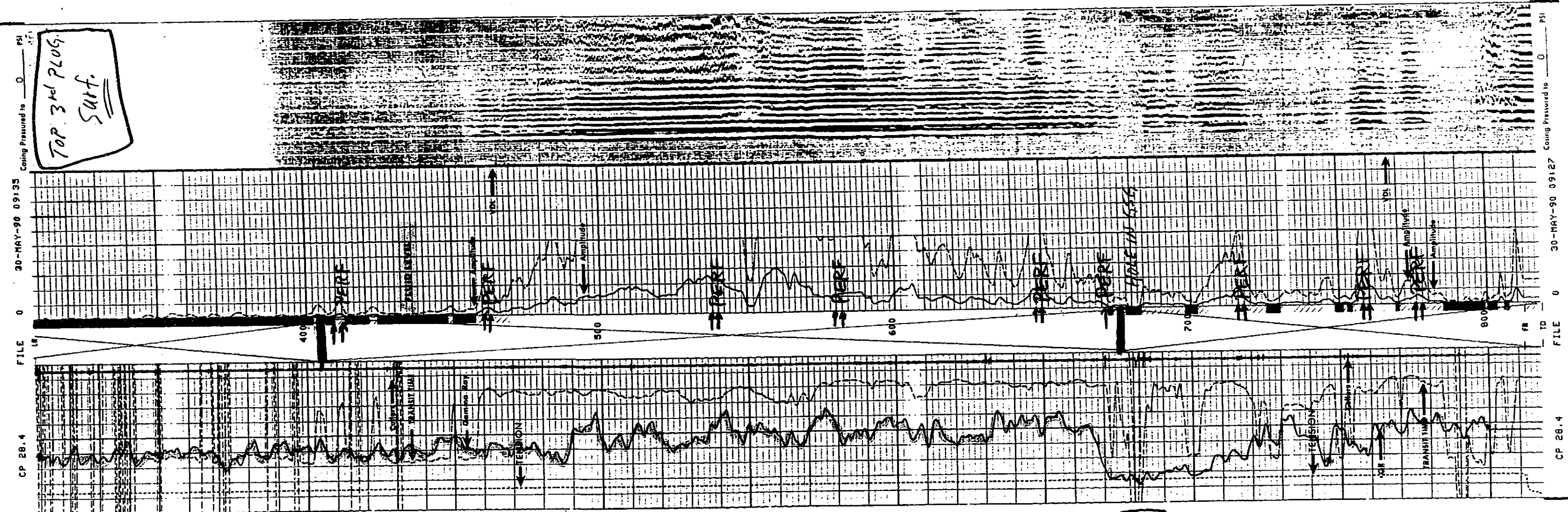
Scale, 1"=200'

CERTIFICATION: This will certify that the
field work for the survey shown hereon
was done under my supervision on Jan 8, 1970.
Eugene J. Kelly



ARIZONA SURVEYING SERVICE

2802 W. SOLANO DR., N. PHOENIX, ARIZONA
DRAWING No. L-70-1569



Morton
Salt # 2
(527)

TOP 2nd PLOG
406'

TOP 1st PLOG
676'



Oil and Gas Conservation Commission

STATE OF ARIZONA

5150 N. 16th STREET, SUITE B-141
PHOENIX, ARIZONA 85016
PHONE: (602) 255-5161

August 27, 1990

Ms. Betty Johns
Manager of Insurance Accounting
Morton International, Inc.
110 North Wacker Drive
Chicago, IL 60606-1560

RE: Southwest Salt Company
Performance Bonds 8306106 and 8418292

Dear Ms. Johns:

In reply to your letter of August 20, this letter represents this Commission's approval to release the referenced performance bonds 8306106 and 8418292.

Our records show that the wells drilled under the referenced bonds, namely Roach-Baker 1, permit 527, and Roach-Baker 2, permit 548, have been plugged and abandoned to the satisfaction of this Commission.

Sincerely,

Steven L. Rauzi

Steven L. Rauzi
Oil & Gas Specialist

Morton International

August 20, 1990

Dr. Daniel Brennan
Executive Director
State of Arizona
Oil & Gas Conservation Commission
5150 N. 16th St., Suite B-141
Phoenix, AZ 85016

RE: Southwest Salt Company
Bond No. 8306106 and 8418292

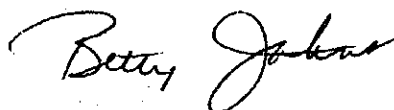
Subject: Request to terminate bonds

Dear Dr. Brennan:

I have been requested to ask that the above captioned bonds be terminated with the Commission's approval. Please see attached memo from our Southwest Salt Company, (a wholly-owned subsidiary of Morton International, Inc.), and copies of bonds.

Please advise if this action is appropriate at this time. If further information is required, please let me know.

Sincerely,



Betty Johns,
Manager of Insurance Accounting

BJ/cm
Enclosures

cc: Gary McFarlin
Jeff Sandburg

REC-310
AUG 20 1990

Morton International

Morton Salt

Interoffice Memo

August 13, 1990

To: Betty Johns
Corporate Insurance
From: G. L. McFarlin
Glendale
Subject: Performance Bonds - Oil and Gas Conservation Commission

Please find attached copies of bonds serial numbers 83-06-106 and 84-18-292. These bonds were posted with the Arizona Oil and Gas Conservation Commission to insure proper abandonment of Roach Baker wells #1 and #2. Both of these wells were properly abandoned in June 1990. The bonds are no longer required and should be released.

Please let me know if you require anything else. I would appreciate copies of any correspondence relating to this matter.

Sincerely,

G. L. McFarlin
G. L. McFarlin

GLM:jp

cc: File 030-1
File 030-2





Oil and Gas Conservation Commission
STATE OF ARIZONA

5150 N. 16th STREET, SUITE B-141
PHOENIX, ARIZONA 85016
PHONE: (602) 255-5161

527

July 30, 1990

Mr. Gary L. McFarlin
Facility Manager
Morton Salt
13000 West Glendale Avenue
Glendale, AZ 85307-2408

Dear Gary:

Enclosed are copies of the surety bonds for the
wells Roach-Baker (1) and Roach-Baker 2.

Let me know if I can be of further assistance.

Sincerely,

Steve

Steven L. Rauzi
Oil & Gas Specialist



Oil and Gas Conservation Commission

STATE OF ARIZONA

5150 N. 16th STREET, SUITE B-141
PHOENIX, ARIZONA 85016
PHONE: (602) 255-5161

July 6, 1990

Mr. J. H. Huizingh
Morton International Inc.
110 North Wacker Drive
Chicago, IL 60606-1555

Dear Mr. Huizingh:

I hereby acknowledge receipt of the plugging records dated July 3, 1990, for Roach-Baker 1 (P/N 527) and Roach-Baker 2 (P/N 548). This Commission is satisfied with your plugging and abandonment of these wells.

Sincerely,

Steven L. Rauzi

Steven L. Rauzi
Oil & Gas Specialist

**AZ OIL & GAS
CONSERVATION COMMISSION**

JUL 6 1990

Morton International

Morton Salt

July 3, 1990

Certified Mail

Mr. Steven L. Rauzi
Oil and Gas Conservation Commission
State of Arizona
5150 North 16 Street, Suite B141
Phoenix, AZ 85016

Mr. James Walker
U.S. EPA Region VIII
Drinking Water Branch (8WM-DW)
999 18th Street, Suite 500
Denver, CO 80202-2405

Dear Messrs. Rauzi and Walker:

In accordance with Arizona Administrative Code R12-7-127.C, the plugging records (Form No. 10) are attached for both Roach-Baker No. 1 (Permit No. 527) and Roach-Baker No. 2 (Permit No. 548). The plugging began for each well according to the final plans dated January 16, 1990, and approved by the AOGC in a letter dated January 22, 1990, and the U.S. EPA Region IX in a letter dated February 16, 1990 (Refer to W-6-2). The plans were revised on site when necessary with the concurrence of the AOGC and EPA representatives. The attached documents present the as plugged condition of each well.

Should you have any questions concerning the reports, please feel free to contact me at (312) 807-2594.

It is requested that the Arizona Oil and Gas Conservation Commission and U.S. EPA Region 9 advise in writing that the pluggings and abandonment of these two wells are satisfactory.

Thank you both for your assistance in successfully plugging these two wells.

Yours very truly,

Jim Huizingh

J. H. Huizingh
Manager, Solar Salt Technology

kkg

cc: J. J. Harkins
G. L. McFarlin - Glendale
M. E. Stover



P & A WITNESS RECORD

MORTON (SOUTHWEST) SALT NOS. 1 & 2, PERMIT NOS. 527 & 548

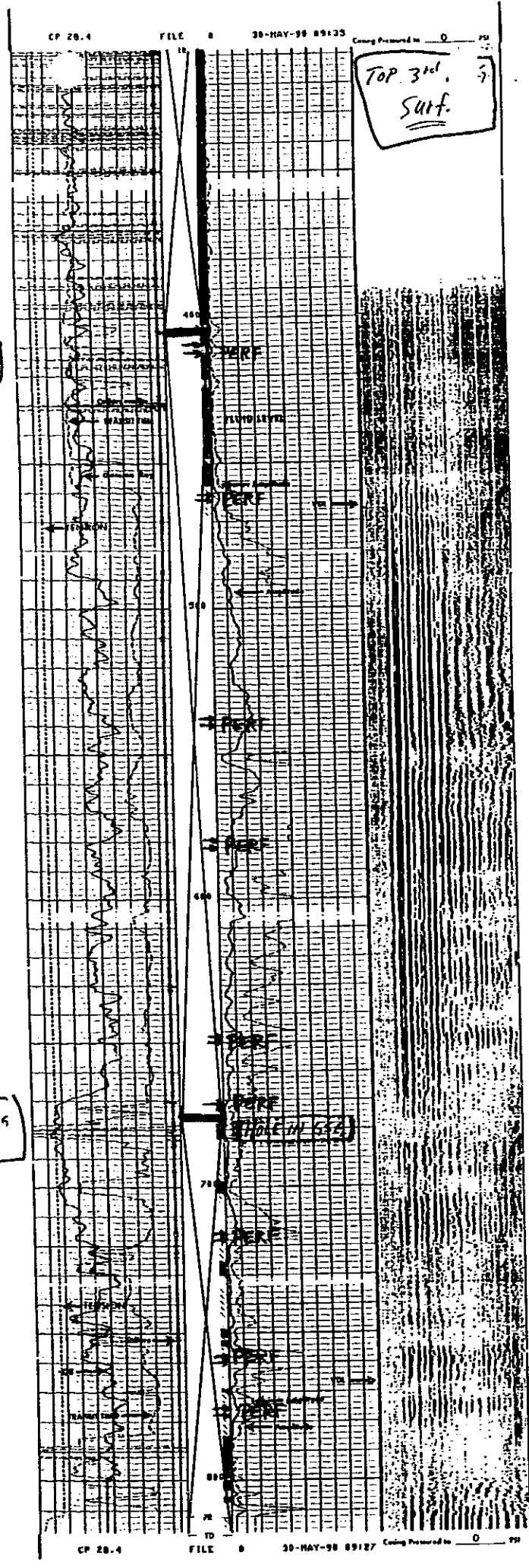
- 5/30/90: Run CBL logs on both the 1 & 2 wells.
Discuss P & A plans. (finish 6:30pm)
- 5/31/90: View the downhole video of wells and note depths of csg damage.
Run Thermal Decay Time (TDT) log on 2 (no diesel located).
Determine perfs for squeeze on 1 & 2.
Decide to perf top of cavern for diesel on 2. (finish at 6:00pm)
- 6/01/90: Tag plug in 1 and perf 778' up to 716'.
Cement 1 from plug up to 700', WOC overnight.
Perf 2 and let stand overnight to allow diesel to surface.
- 6/02/90: (Saturday, 7:30am to 6:20pm)
Bail fluid on 2 with dump bailer for 2 hrs with no diesel recovery.
Retrieve pkr in 2, set plug at 970', spot 10' cmt with bailer, WOC.
Tag TOC in 1 at 672', spud with tbg to 676' (hard cement).
In conference call with JW-EPA, agree to eliminate pkr at 640'.
Perf 1 from 650' up to 100' and lift cement up to 400'.
- 6/03/90: (Sunday, 7:00am to 3:30pm)
Tag TOC in 1 at 406', circulate cement to surface, no drop.
Perf 2 at 928'-32', lift cmt to 650', set pkr, squeeze at 56 psi.
- 6/04/90: (start at 6:30am) Perf 2 from 638' to 100'.
Pump 223 sacks of cement through tbg, WOC 8 hrs, reload cmt truck.
Tag TOC at 342', pump 240 sacks, WOC overnight. (finish at 8:00pm)
- 6/05/90: (start at 7:00am) Tag TOC at 165', circ cmt to surface, no drop.
- 6/06/90: Weld plates on both 1 & 2 per R12-7-127.7.

S. L. Rauzi
S. L. Rauzi, 6/06/90

Morton
Salt # 1
(527)

Top 2nd PLUG
406'

Top 1st PLUG
676'



Morton Salt # 1
P/N 527

Schlumberger

SCHLUMBERGER WELL SERVICES
5000 GULF FREEWAY, P.O. BOX 2175
HOUSTON, TEXAS 77001, (713) 928-4000

PN 527, 548

PLEASE REPLY TO

Schlumberger Well Services
Wireline & Testing
#17 County Rd. 5911
Farmington, NM 87401

May 29, 1990

Jim Huizingh
Morton Salt
13000 W. Glendale Ave.
Glendale, AZ 85307

TO WHOM IT MAY CONCERN,

Bill Kelt is qualified as a Schlumberger Specialist in the interpretation of CBL's and TDT's. Bill has 9 years experience with Schlumberger and has been tested on CBL and TDT interpretation, and given promotions based on those tests. All logs and interpretations are checked by me, (David L. Fairhurst), I have 8 years experience with both CBL and TDT interpretation.

If there are any questions, please call me at (505) 325-5006.

Sincerely,

David L. Fairhurst

David L. Fairhurst
District Manager

DLF/ts



Oil and Gas Conservation Commission

STATE OF ARIZONA

5150 N. 16th STREET, SUITE B-141
PHOENIX, ARIZONA 85016
PHONE: (602) 255-5161

May 25, 1990

MEMO TO FILE

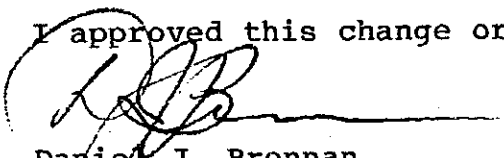
P\N 527
Southwest Salt
Roach Baker #1

Jim Huizing of Morton Salt called to inform me of status of the plugging operation on P/N 527.

They have been able to clean out to 840'. The old 5-1/4" ID casing was light weight welded line pipe. It is in bad shape and has been squeezing into the hole and making it difficult to get deeper.

He proposes to change the plan by setting a plug at 840' instead of approximately 870'. Then they want to set 10' of Class 2 wet cement on top of the plug, using a dump bailer. Wait on cement overnight. Tag top of cement with perforating tool, pull up one foot and perforate as in plan.

I approved this change orally.


Daniel J. Brennan
Executive Director

Morton International

Morton Salt

May 1, 1990

Mr. Daniel Brennan
Executive Director
Arizona Oil and Gas Commission
5150 North 16 Street
Suite B 141
Phoenix, AR 85016

Mr. Harry Seraydarian
Director, Water Management Division
U.S. EPA Region 9
215 Fremont Street
San Francisco, CA 94105

Dear Messrs. Brennan and Seraydarian:

This is a follow-up to my letter to you dated April 12, 1990, concerning plugging Roach-Baker Wells No. 1 and No. 2 at Southwest Salt Company, Glendale, Arizona. The drilling rig is scheduled to arrive on Tuesday, May 1. The plugging of Well No. 2 will be done first.

As agreed to by phone on Friday, April 27, I will contact the AOG representative (Dan Brennan) and the EPA representative (George Robin) when the well is clear and a cement bond log can be scheduled.

I anticipate that further communication will be made by phone or on site with the agency representatives.

Sincerely yours,

J. H. Huizingh /kg

J. H. Huizingh
Manager, Solar Salt Technology

kgg



cc: James Walker
U.S. EPA Region 9
c/o U.S. EPA Region 7
One Denver Place
999 18th Street
Denver, CO 80202

J. J. Harkins
M. E. Stover
G. L. McFarlin - Glendale

Morton International

Morton Salt

AZ OIL & GAS
CONSERVATION COMMISSION

APR 13 1990

April 12, 1990

527

Mr. Daniel Brennan
Executive Director
Arizona Oil and Gas Commission
5150 North 16th Street
Suite B 141
Phoenix, Arizona 85016

Mr. Harry Seraydarian
Director, Water Management Division
U.S. EPA Region 9
215 Fremont Street
San Francisco, California 94105

Dear Messrs. Brennan and Seraydarian:

Morton Salt intends to commence plugging the No. 1 and No. 2 wells at Southwest Salt Company, Glendale, Arizona during the week of April 23, 1990. This letter fulfills the requirement for notifying the Arizona Oil and Gas Commission and the U.S. EPA one week in advance of the start of the work, as stated in the plugging plans dated January 16, 1990, and approved by the AOG in a letter dated January 22, 1990 and the U.S. EPA Region 9 in a letter dated February 16, 1990 (refer to W-6-2). When the specific date for starting during the week of April 23 is chosen, notification will be made by telephone with a follow-up letter of confirmation.

Yours very truly,

pronounced
High 2ing
J. H. Huizingh
Manager, Solar Salt Technology

JHH/cm
041290

(312) 807-2594



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, CA 94105

cc:

February 16, 1990

H. W. Diamond
Director of Engineering
Morton International Inc.
110 North Wacker Drive
Chicago, IL 60060-1555

In reply
refer to W-6-2

RE: Southwest Salt Roach-Baker No. 1 and No. 2
Plugging and Abandonment Plans

Dear Mr. Diamond:

We have reviewed the proposed minor modifications to the plugging and abandonment procedures for the subject wells, described in your letter and Plugging Plans dated January 16, 1990.

The proposed revisions, in Steps 7 and 8 for well No. 1 and Steps 9 and 10 for well No. 2, add detail and clarification but do not represent a substantial change to the procedures. The EPA therefore finds these revisions acceptable.

The revised Plugging Plans for the referenced wells, dated January 16, 1990, are hereby approved.

Upon completion of the plugging and abandonment operations, submit a full report to this office describing the work performed and the results of any testing or logging that was done, in accordance with 40 CFR Part 144.28(k).

If you have any further questions concerning these matters, please call James Walker at (303) 293-1429 or Lester Kaufman, Chief, Underground Injection Control Section, at (415) 744-2250.

Sincerely,


Harry Seraydarian, Director
Water Management Division

cc: Daniel Brennan, Executive Director,
Arizona Oil & Gas Commission



Oil and Gas Conservation Commission
STATE OF ARIZONA

5150 N. 16th STREET, SUITE B-141
PHOENIX, ARIZONA 85016
PHONE: (602) 255-5161

January 22, 1990

H. W. Diamond
Director of Engineering
Morton Salt Company
110 North Wacker Drive
Chicago, IL 60606-1555

RE: Plugging Plan, Roach-Baker No. 1 (State Permit #527)
Plugging Plan, Roach-Baker No. 2 (State Permit #548)

Dear Mr. Diamond:

We are in receipt of your revised Plugging Plans dated 16 January 1990 for the above referenced wells. This letter constitutes our approval of the proposed steps as presented in those plans.

Sincerely,

Steven L. Rauzi

Steven L. Rauzi
Oil & Gas Specialist

AZ OIL & GAS
CONSERVATION COMMISSION

JAN 19 1990

Morton International

Morton Salt

January 16, 1990

Mr. Daniel Brennan
Executive Director
Arizona Oil and Gas Commission
5150 North 16th Street
Suite B 141
Phoenix, Arizona 85016

Mr. James Walker
U.S. EPA Region 9
c/o U.S. EPA Region VII
One Denver Place
999 18th Street
Denver, Colorado 80202

RE: Arizona Oil and Gas Commission Conservation Commission
Response of December 7, 1989 and U.S. EPA Region 9
Response of December 22, 1989 to Morton Salt letter
of November 30, 1989 on Plugging Southwest Salt
Company's Roach-Baker No. 1 and No. 2 Wells

Dear Mr. Brennan and Mr. Walker:

U.S. EPA Region 9 has responded to the November 30, 1989 plugging plans in its letter of December 22, 1989, a copy of which is enclosed; the plans were approved as submitted.

The Arizona Oil and Gas Conservation Commission has responded to the November 30, 1989 plugging plans in its letter of December 7, 1989, a copy of which is enclosed. Basically it pointed out that, 1) if the cement falls back, it must be re-filled and, 2) when there is a two step procedure, the top of the cement must be tagged before the second step is undertaken. The Commission advised that the plans will be approved with the inclusion of minor modifications to address these concerns.



In order to incorporate these items, Morton Salt proposes the following:

1. Add the following sentence to step 7 for Well No. 1 and to step 9 for Well No. 2: "Wait at least eight hours for the cement to harden. Tag the top of the cement; if it has fallen back, refill to 400'. Repeat the filling, waiting, tagging, sequence until the casing is cemented to 400'."
2. Add the following sentence to step 8 for Well No. 1 and step 10 for Well No. 2: "Wait at least eight hours for the cement to harden. If it has fallen back, refill to the surface. Repeat the filling and waiting sequence until the casing is cemented to the surface."

The plugging plans for the wells have been revised to incorporate these changes and are enclosed.

The revisions provide more detail to the procedures and are not a change. It is requested that the Arizona Oil and Gas Conservation Commission and U.S. EPA Region 9 advise in writing whether the January 3, 1990 plans are acceptable.

As stated previously, as soon as final approval is received a funding request will be submitted to Morton Salt Management and immediately after it is approved, the work will begin. We wish to again express our appreciation to both of you in developing this plan.

Yours very truly,

H. W. Diamond

H. W. Diamond
Director of Engineering

HWD/cm
122689

Enclosure

cc: Mr. Lester Kaufman- UIC Section Chief
U.S. EPA - Region 9
215 Fremont Street
San Francisco, California 94105

J. E. Goodbrake
G. L. McFarlin-Glendale
M. E. Stover

Plugging Plan for Roach-Baker #1
Revised by Morton Salt
January 16, 1990

For all cementing: cement will be Class A or B or Type 2. Cement may be purchased locally and mixed and pumped with rig equipment. It will be neat cement mixed with water and no other additions. Wait-on-cement time will be at least eight hours. After each stage of cementing, the top of the cement will be tagged. If the cement is hard, proceed to the next step; if top of cement is not found, repeat procedures as necessary until a hard cement plug is established.

Notification: The Arizona Oil and Gas Commission and the U.S. EPA will be notified one week in advance of the start of the work.

1. Clean up cement around 5-1/2" casing at surface and weld a wellhead in place in case a blow out preventer is needed.
2. Remove the 3-1/2" tubing down to 880' with the following plan:
 - A. Drill out the 3-1/2" tubing so that a cutter may be run to 880' and cut the tubing.
 - B. Cut tubing and remove with standard fishing tools.
 - C. Mill whatever tubing cannot be pulled.
3. Run a cement bond log to determine that the top of the cavity is below 880'. This is the bottom of the 5-1/2" casing on the top of the salt. If the top of cavity is higher than 870', Oil and Gas Commission will be notified; all expectations are that the cavity will be at 800' or below and we will be able to continue with the next step. If the bond log does not clearly indicate the top of cavern, another log type as determined by Morton Salt will be run.
4. Set a regular cast-iron bridge plug as low in the 5-1/2" casing as possible (approximately 870'). If the casing conditions and size are unknown, set an inflatable bridge plug. Using tubing, break circulation and clean hole. Place 10' to 20' of cement on plug.

1/16/90

5. Perforate 5-1/2" casing with eight shots per foot over a four foot section. This will be done at approximately 840' above the plug and as low as possible in the anhydrite confining zone above the salt. Eight shots per foot will probably be accomplished by two runs at four shots per foot.
6. Set packer at 700' and attempt to squeeze cement from 870' to just below 700'. If formation will not take squeeze fluid, fill with cement to just below 700'.
7. If the cement bond log shows uncemented volumes behind the 5-1/2" casing, consult the Commission Representative on-site on the number and location of perforations to fill this void and perforate accordingly. Also, consult the Commission and U.S. EPA Representatives for any perforations that are appropriate between 700' and 400' and perforate accordingly. Fill with cement to 400'. Wait at least eight hours for the cement to harden. Tag the top of the cement; if it has fallen back, refill to 400'. Repeat the filling, waiting, tagging, sequence until the casing is cemented to 400'.
8. If the cement bond log shows uncemented volumes behind the 5-1/2" casing above 400', consult the Commission and U.S. EPA Representatives on-site on the number and location of perforations to fill this void. The section above the fluid level will be perforated a couple of times just in case there are uncemented sections above this point. Fill with cement to surface. Wait at least eight hours for the cement to harden. If it has fallen back, refill to the surface. Repeat the filling and waiting sequence until the casing is cemented to the surface.
9. Cut off casing and install plugged well marker in accord with R12-7-127.

In the event of unexpected complications, the program will be revised as directed by the Commission and U.S. EPA Representatives on-site.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, CA 94105

DEC 22 1989

In Reply
Refer to w-6-2

H. W. Diamond
Director of Engineering
Morton International, Inc.
110 North Wacker Drive
Chicago, IL 60060-1555

RE: Southwest Salt Roach-Baker #1
Plugging and Abandonment Plan

Southwest Salt Roach-Baker #2
Plugging and Abandonment Plan

Dear Mr. Diamond:

We have reviewed the revised plugging and abandonment plans for the subject wells that were attached to your letter of October 9, 1989 as attachments #1 and #2. We found them to be acceptable with the exception of the cementing procedure proposed for the lowermost set of perforations in each well. The EPA position was presented by James Walker, EPA Environmental Engineer, in telephone conversations with you on November 14 and 15:

The bottom squeeze operation should be performed separately through a packer or retainer set above the perforations to ensure that an adequate cement volume is placed in the annular space behind the production casing between the salt formation and the USDW.

We have reviewed your last P & A revision (dated November 27), which includes a separate squeeze operation for the lowermost perforations and setting cement plugs in two or more stages in each well. The plans are approved as presented in these documents.

Upon completion of the plugging and abandonment operations, submit a full report to this office describing the work conducted and the results of any testing or logging that was done per 40 CFR §144.28(k).

If you have any further questions concerning these matters,
please call James Walker at (303) 293-1431 or Lester Kaufman,
Chief, Underground Injection Control Section, at (415) 654-9275.

Sincerely,

Harry Seraydarian
Harry Seraydarian, Director
Water Management Division

cc: Daniel Brennan - Arizona Oil and Gas Commission



Oil and Gas Conservation Commission

STATE OF ARIZONA

5150 N. 16th STREET, SUITE B-141
PHOENIX, ARIZONA 85016
PHONE: (602) 255-5161

December 7, 1989

Mr. H. W. Diamond
Director of Engineering
Morton International, Inc.
110 N. Wacker Drive
Chicago, IL 60606-1555

Dear Mr. Diamond:

In response to your letter of November 30, 1989 we have the following comments on the Plugging Plan for Roach-Baker #1.

1. It is unclear whether you intend a period of waiting for cement to harden between step 7 and step 8. Is this intended to be a continuous procedure? Is this a stage as mentioned in the introductory paragraph?
2. You have eliminated the required waiting period in the cementing to the surface procedure (Step 8). You are required to check for "fall back" after cementing and to refill the hole if it does not remain full.

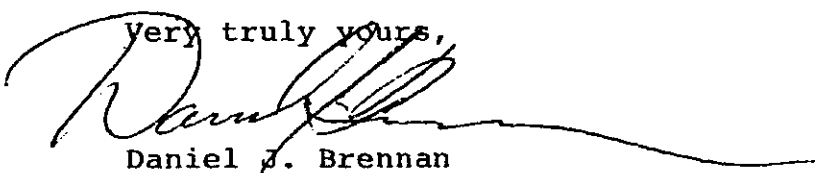
With regard to the Plugging Plan for Roach-Baker #2 we note that the same comments apply, in this case at steps 9 and 10.

Please modify your plans to clarify whether cementing above 700 feet (#1) or above 800 feet (#2) is to be a two-step or a one-step procedure. (Either a one-step or a two-step procedure will be approved by the Commission.) If it is to be a two-step procedure the top of the cement must be tagged before the second step is undertaken.

You must wait at least 8 hours after cementing to the surface to check for fall-back. If the cement level has gone down, repeat the cementing process until cement remains at the surface after eight hours of waiting time. This was included in your earlier plan.

The Commission will approve the present plan (dated November 20, 1989) with the inclusion of these minor modifications.

Very truly yours,


Daniel J. Brennan
Executive Director

Morton International

Morton Salt

November 30, 1989

Mr. Daniel Brennan
Executive Director
Arizona Oil and Gas Commission
5150 North 16th Street
Suite B 141
Phoenix, Arizona 85016

Mr. James Walker
U.S. EPA Region IX
c/o U.S. EPA Region VII
One Denver Place
999 18th Street
Denver, Colorado 80202

RE: Southwest Salt Company, Plugging Roach-Baker
No. 1 and No. 2 Wells

Dear Mr. Brennan and Mr. Walker:

Morton Salt's letter of October 9, 1989 to Mr. Harry Seraydarian (U.S. EPA Region IX) with a copy to Mr. Brennan, proposed an alternative method for plugging the No. 1 and No. 2 wells at Southwest Salt Company - Glendale, Arizona. As a result of the October 9 letter, further discussions were held between Mr. Walker and Morton Salt.

Enclosed are revised plans dated November 20, 1989 for plugging these two wells. It is believed that they will be acceptable to the Arizona Oil and Gas Commission and Mr. Walker has indicated preliminary approval by U.S. EPA Region IX.

It is requested that both the Arizona Oil and Gas Commission and the U.S. EPA Region IX advise in writing whether the November 20, 1989 plans are acceptable. As soon as approval is received, a funding request will be submitted to

Morton Salt management and immediately thereafter, the work will begin.

We wish to express our appreciation to both of you for your assistance in developing this plan.

Yours very truly,

H. W. Diamond

H. W. Diamond
Director of Engineering

HWD/cm
112289

Enclosure

cc: Mr. Lester Kaufman- UIC Section Chief
U.S. EPA - Region IX
215 Fremont Street
San Francisco, California 94105

J. E. Goodbrake
M. E. Stover
G. L. McFarlin-Glendale

Plugging Plan for Roach-Baker #1
Revised by Morton Salt
November 27, 1989

For all cementing: cement will be Class A or B or Type 2. Cement may be purchased locally and mixed and pumped with rig equipment. It will be neat cement mixed with water and no other additions. Wait-on-cement time will be at least eight hours. After each stage of cementing, the top of the cement will be tagged. If the cement is hard, proceed to the next step; if top of cement is not found, repeat procedures as necessary until a hard cement plug is established.

Notification: The Arizona Oil and Gas Commission and the U.S. EPA will be notified one week in advance of the start of the work.

1. Clean up cement around 5-1/2" casing at surface and weld a wellhead in place in case a blow out preventer is needed.
2. Remove the 3-1/2" tubing down to 880 feet with the following plan:
 - A. Drill out the 3-1/2" tubing so that a cutter may be run to 880 feet and cut the tubing.
 - B. Cut tubing and remove with standard fishing tools.
 - C. Mill whatever tubing cannot be pulled.
3. Run a cement bond log to determine that the top of the cavity is below 880 feet. This is the bottom of the 5-1/2" casing on the top of the salt. If the top of cavity is higher than 870 feet, Oil and Gas Commission will be notified; all expectations are that the cavity will be at 800 feet or below and we will be able to continue with the next step. If the bond log does not clearly indicate the top of cavern, another log type as determined by Morton Salt will be run.
4. Set a regular cast-iron bridge plug as low in the 5-1/2" casing as possible (approximately 870 feet). If the casing conditions and size are unknown, set an inflatable bridge plug. Using tubing, break circulation and clean hole. Place 10 to 20 feet of cement on plug.

5. Perforate 5-1/2" casing with eight shots per foot over a four foot section. This will be done at approximately 840 feet, above the plug and as low as possible in the anhydrite confining zone above the salt. Eight shots per foot will probably be accomplished by two runs at four shots per foot.
6. Set packer at 700 feet and attempt to squeeze cement from 870 feet to just below 700 feet. If formation will not take squeeze fluid, fill with cement to just below 700 feet.
7. If the cement bond log shows uncemented volumes behind the 5-1/2" casing, consult the Commission representative on-site on the number and location of perforations to fill this void and perforate accordingly. Also, consult the Commission and U.S. EPA representatives for any perforations that are appropriate between 700 feet and 400 feet and perforate accordingly. Fill with cement to 400 feet.
8. If the cement bond log shows uncemented volumes behind the 5-1/2" casing above 400 feet, consult the Commission and U.S. EPA representatives on-site on the number and location of perforations to fill this void. The section above the fluid level will be perforated a couple of times just in case there are uncemented sections above this point. Fill with cement to surface.
9. Cut off casing and install plugged well marker in accord with R12-7-127.

In the event of unexpected complications, the program will be revised as directed by the Commission and U.S. EPA representatives on-site.

111589

Morton International

Morton Salt

October 9, 1989

Mr. Harry Seraydarian
Director, Water Management Division
U. S. EPA - Region IX
215 Fremont Street
San Francisco, California 94105

RE: Southwest Salt Roach-Baker #2
Plugging and Abandonment Plan
(U. S. EPA Reference W-6-2 of
June 19, 1989)

Southwest Salt Roach-Baker #1 (#527)
Plugging and Abandonment Plan
(U. S. EPA Reference W-6-2 of
July 17, 1989) *see page 6*

Dear Mr. Seraydarian:

On March 14, 1989 Morton Salt submitted plugging and abandonment plans that had been approved by the Arizona Oil and Gas Commission for wells Roach-Baker #1 and Roach-Baker #2, both in Glendale Arizona. Your letter of June 19, 1989 approved a plugging and abandonment plan for Roach-Baker #2 provided certain conditions or changes were incorporated. Your letter of July 17, 1989 advised that the plan for Roach-Baker #1 was approved but recommended incorporation of certain changes.

Morton Salt has reviewed the requested conditions and changes and requests clarification on some and reconsideration of others.

As a starting point, here is Morton Salt's understanding of the program requested by U. S. EPA Region 9 for Roach-Baker #2.

1. Remove 5" and 7" tubing at least to 1050 ft. If it will not come free by conventional means, may run a

freepoint and cut where tubing is free. May need to pull in sections.

2. Remove 8-5/8" liner. May need to cut in sections and remove as above. Well will now be clear to at least 1050 ft.
3. Run cement bond log deep enough to pick up the top of the cavity and high enough to pick up the top of the fluid level. If the tubing is only cleared to 1050 ft. and the log shows that the top of the cavity is below that, an attempt will be made to clear the tubing and find the top of the cavity. If the cement bond log does not clearly indicate the top of the cavern, a sonar survey will be run.

Note: Morton Salt requests that it be allowed to determine the type of log to use if the cement bond log does not clearly indicate the top of the cavern.

4. Run a density interface type log from below top of the cavity to the surface. This type of log will pick up any pockets of oil as a lower density fluid. Exact specifications of log will depend on which logging contractor is selected. Logging contractor will be qualified to interpret whatever logs are run; evidence of qualification will be provided once the logging contractor is selected.
5. If oil is found, perforate the 10-3/4" casing with at least 40 holes or 10 feet with 4 jets per foot and attempt to remove all of the oil. If no oil is found perforate at the top of cavity as that is where any oil trapped in the cavity would collect. If there is any oil in the cavity it will flow to the top of the fluid level as the lower density oil makes its way into the casing.

After a waiting period of eight hours, begin bailing the casing; continue bailing until there is a two hour period in which no oil is recovered. Any oil that is found will be directed into a reserve pit and disposed of properly.

- 6A. Set a regular cast-iron bridge plug 20 feet above the perforations completed in Step No. 5. If the casing conditions and size are unknown, set an inflatable bridge plug. Using tubing, break circulation and clean hole. Place 10 to 20 ft. of Class A or B or Type 2

cement on plug. Cement may be purchased locally and mixed and pumped with rig equipment. It will be neat cement, mixed with water and no other additions. Wait on cement time will be at least eight hours.

Tag top of cement. If cement is hard, proceed to next step. If top of cement is not found, repeat procedures as necessary until a hard cement plug is established in the hole.

- 6B. Conduct a pressure test of the 10-3/4" casing to prove mechanical integrity of the casing. If the casing leaks, determine the location of the leak or leaks and repair by cementing prior to proceeding with the plugging procedure.
- 7A. Perforate the 10-3/4" casing with eight shots per foot over a four foot section at approximately 960 feet above the plug, and as low as possible in the anhydrite confining zone above the salt. Eight shots per foot will probably be accomplished by two runs at four shots per foot.
- 7B. Cement off the perforations at 960± feet to ensure this interval is plugged off.
- 7C. Set a retainer or packer immediately below the proposed perforations as stated in Step No. 8. This will leave a column of cement from the next proposed perforation to 960 feet.

Note: Step 7C was requested by the U.S. EPA. Morton Salt does not understand it and requests clarification.

- 8A. If bonding is questionable at the base of the USDW (800 feet), the interval will be perforated and squeezed.

Note: From data collected by Morton at other wells it believes that the base of the USDW is shallower than 800 feet. Morton Salt only notes this for the record; if bonding is questionable, the casing will be perforated at 800' and squeezed.

- 8B. If the cement bond log shows uncemented volumes behind the 10-3/4" casing, the Commission representative on site will be consulted on the number and location of perforations to fill this void. The area above the fluid level will be perforated a couple of times just in case there are uncemented sections above this point.

9. Delete.

Note: This step has been incorporated into Step 6A.

10. Delete.

Note: This step has been incorporated into Step 6A.

11A. Using Class A or B or Type 2 cement, pump cement through the tubing to fill the well to approximately 400'. Wait at least eight hours and tag the top of cement. Repeat Step 11A until the top of the cement is at approximately 400'.

11B. Pump cement through the tubing to fill the well to the surface.

12. Wait at least eight hours and tag top of cement. Refill with cement any volume that has been squeezed off. Repeat until cement remains at surface after eight hours of waiting time.

13. Cut off casing and install plugged-well marker in accord with R12-7-127.

It is believed that the Arizona Oil and Gas Commission, the U. S. EPA and Morton Salt are all in agreement for Steps 1 through 6A (except for Morton Salt's request under Step 3 that it be allowed to determine the type of log if the cement bond doesn't clearly indicate the top of the cavern); however, Morton Salt is concerned about Steps 6B through 11 and asks that they be reconsidered.

The procedure described above calls for a step-by-step process consisting of:

- (1) squeeze the leak believed to be behind the 8-5/8 inch liner set to 840 feet.
- (2) test for leaks and if any are found, squeeze.
- (3) perforate at 960 feet and squeeze.
- (4) if bonding is questionable at 800 feet, perforate and squeeze.
- (5) if the cement bond log shows uncemented volumes behind the 10-3/4 inch casing, consult the Commission representative on site and perforate as instructed (note that the procedure does not call for separate squeezing of these perforations).

Each separate squeeze requires the following steps: (1) locate the leak if not a result of a perforation at a known depth, (2) set a plug below the leak, (3) set a packer above the leak, (4) squeeze the leak, (5) remove the packer, (6) drill out the squeeze and the plug. Doing each squeeze separately is very time consuming and therefore costly.

The following is Morton Salt's analysis of the potential problems and a proposed alternative procedure. Once Step 6A is completed, two concerns remain:

- 1) Is there an open channel behind part of the casing, and
- 2) When the entire well is filled with cement at Step 11, could the cement leak out at some point leaving a void in the casing?

To address these concerns, Morton Salt proposes the following in place of Steps 6B through 11:

7. Perforate at 960 ft., if the bonding is questionable perforate at 800 ft. and perforate as directed by the Arizona Oil and Gas Commission representative if the cement bond log shows uncemented volumes behind the 10-3/4 " casing.
8. Using Class A or B or Type 2 cement, pump cement through tubing to fill the well to the surface. Wait at least eight hours and tag the top of the cement. Refill with cement any volume that may have been squeezed off. Repeat until cement remains at surface after eight hours of waiting time.

Note: Class A and B and Type 2 cement has a density of 117 lbs. per cubic foot which is a pressure gradient of 0.81 psi/foot (from $\frac{117 \text{ lbs/ft}^3}{144 \text{ in}^2/\text{ft}^2}$).

In order to ensure that the formation is not fractured, standard practice is to limit injection pressure to 0.80 to 0.85 psi/ft. Thus, the pressure exerted by the column of cement is the maximum that would be used in a conventional squeeze between a plug and a packer.

9. Drill out the cement plug with approximately a 4" bit down to the top of the plug set in Step 6A.
 - a. If one or more voids are found, refill the casing with cement as in Step 6 and drill. Repeat the re-cementing and re-drilling until no voids are found when drilling.

- b. When no voids are found, refill the casing with cement as in Step 8.

Morton Salt believes that this will accomplish the same results as the plan in U. S. EPA's letter of June 19. The squeeze pressure will be the same as if each squeeze was done separately. A check will be made to determine whether the cement has gone out of the casing leaving a void; the procedure will be repeated until it is confirmed that the cement has not gone out and left a void.

For Roach-Baker #1, Morton Salt proposes essentially the same program as for Roach-Baker #2 but without checking for and removing oil, as no oil was injected into Roach-Baker #1. Attachments #1 and #2 are the revised proposed plugging plans for Roach-Baker #1 and Roach-Baker #2, respectively.

Morton Salt requests that U. S. EPA Region 9 respond with one of the following:

- 1) Approve Morton Salt's proposal in this letter; Morton Salt will immediately make arrangement to plug the wells.
- 2) Advise that a meeting would be appropriate between U. S. EPA Region 9 and Morton Salt. Hopefully a representative of the Arizona Oil and Gas Commission would also attend. Morton Salt requests such a meeting to be scheduled for October 31 at the latest. Immediately thereafter, Morton Salt will make arrangements to plug the wells.

If you wish to discuss this further, my phone is (312) 807-2561. While Morton Salt hopes that its plan in attachments #1 and #2 will be approved, it is more important that this matter be resolved promptly. I'm looking forward to hearing from you.

Yours very truly,

H. W. Diamond

H. W. Diamond
Director of Engineering

cm/091189

cc: Daniel Brennan, Arizona Oil and Gas Commission
(w/attachments)
G. L. McFarlin-Glendale
M. E. Stover
J. E. Goodbrake



Oil and Gas Conservation Commission
STATE OF ARIZONA

3110 N. 19th AVENUE, SUITE 190
PHOENIX, ARIZONA 85015
PHONE: (602) 255-5161

March 20, 1989

Mr. E. M. Willse
Senior Project Engineer
Morton Thiokol, Inc.
110 North Walker Drive
Chicago, IL 60606-1555

Re: Southwest Salt Company
Plugging Plans for #1 and #2 Wells
State Permits #527 and #548 respectively

Dear Mr. Willse:

We are in receipt of, and approve, your revised plugging plans dated March 14, 1989.

You will need to complete two copies of our Form No. 9 for each well. Your plugging plans of March 14, 1989, can be attached in response to item #2. After plugging is finished, you will need to complete one copy of our Form No. 10 for each well. The actual work performed should be reported on our Form No. 25. I have enclosed copies of these forms for your use.

It is important that this office be notified 24 hours prior to commencement of operations at the wells.

Should you have any questions or if we can be of further assistance, please advise.

Sincerely,

Steven L. Rauzi

Steven L. Rauzi
Oil & Gas Specialist

SLR:lr
Encl.

MORTON THIOKOL, INC.

Morton Salt Division

March 14, 1989

file 527



Mr. Daniel Brennan
Executive Director
Arizona Oil and Gas Commission
3110 North 19th Avenue
Suite 190
Phoenix, Arizona 85015

RE: Southwest Salt Company
Plugging #1 and #2 Wells

Dear Mr. Brennan:

Enclosed is our second revision to the plugging plan for Roach-Baker #1 and #2. It incorporates all the changes you requested in your letter of February 15, 1989 and that we discussed in our telephone conversation of March 7, 1989. The changes to the plan that was submitted February 2, 1989 are as follows:

Well #1, Step 3 - Has been changed to "If the top of cavity is higher than 870 ft. the Oil and Gas Commission will be notified."

Well #1, Step 4 - Has been changed to allow the setting of either a petal basket or a bridge plug.

Well #2, Step 3 - Has been changed to run the cement bond log up to the top of the fluid level.

Well #2, Step 4 - Has been changed to "Evidence of qualification will be provided."

Well #2, Step 5 - Has been changed to reflect the current plan for determining the presence of oil in the cavern. After perforating, we will wait at least eight hours and then bail until there is a two hour period in which no oil is recovered.

Well #2, Step 8 - Has been changed to add perforating above the top of the fluid level (where the cement bond log cannot

be run) just in case there are uncemented sections there. It has also been changed to consult with the Commission representative on the number and location of perforations to fill any uncemented void.

Well #2, Step 9 - Has been changed to remove the alternative of using a dump boiler to place 10-20 ft. of cement on top of the plug.

If I can be of any assistance during your review don't hesitate to call me. My telephone number is 312/807-2500. We will be waiting for your written approval before we proceed with the project.

Sincerely,

E. M. Willse

E. M. Willse
Senior Project Engineer

cep/020189

Encl.

cc: D. R. Border
J. E. Goodbrake
M. E. Stover

3/14/89

Plugging Plan
Morton Salt - Roach-Baker #1

P/N 527

1. Clean up cement around 5-1/2" casing at surface and weld a wellhead in place in case a blow out preventer is needed.
2. Remove the 3-1/2" tubing down to 880 ft. with the following plan:
 - A. Drill out the 3-1/2" tubing so that a cutter may be run to 880 ft. and cut the tubing.
 - B. Cut tubing and remove with standard fishing tools.
 - C. Mill whatever tubing cannot be pulled.
3. Run a gamma ray log to determine that the top of the cavity is below 880 ft. This is the bottom of the 5-1/2" casing and the top of the salt. If the top of cavity is higher than 870 ft. the Oil and Gas Commission will be notified. All expectations are that the cavity will be at 880 ft. or below and we will be able to continue with the next step.
4. Set a petal basket type plug as low in the 5-1/2" casing as possible (approximately 870 ft.). Drop 10 ft. of sand and gravel into the well to seal off the petal basket. If casing clearances permit, a cast iron bridge plug will be used instead of the petal basket.
5. Perforate 5-1/2" casing with eight shots per foot over a four foot section. This will be done at approximately 840 ft., above the plug and as low as possible in the anhydrite confining zone above the salt. Eight shots per foot will probably be accomplished by two runs at four shots per foot.
6. Using tubing, break circulation and clean hole. Place 10-20 ft. of Class A or B or Type 2 cement on the plug. Cement will be purchased locally and mixed and pumped with rig equipment. It will be neat cement, mixed with water and no other additives. Wait on cement at least eight hours. As an alternate, if it seems more practical this small amount of cement may be placed with a dump bailer.
7. Tag top of cement. If cement is hard, proceed to the next step. If top of cement is not found repeat procedures as necessary until a hard cement plug is established in the hole.

3/14/89

8. Using cement mix as above, pump cement through the tubing to fill the well to surface (approximately 100 sacks). By filling the well to surface the weight of the cement will put 680 psi pressure on the perforations at 840 ft. This will accomplish any squeeze required.
9. Wait at least eight hours and tag top of cement. Refill with cement any volume that has been squeezed off into formation. Repeat until cement remains at surface after eight hours of waiting time.
10. Cut off of casing and install plugged well marker in accord with R12-7-127.



Oil and Gas Conservation Commission

STATE OF ARIZONA
3110 N. 19th AVENUE, SUITE 190
PHOENIX, ARIZONA 85015
PHONE: (602) 255-5161

February 15, 1989

Mr. E. M. Willse
Senior Project Engineer
Morton Thiokol, Inc.
110 North Wacker Drive
Chicago, IL 60606-1555

Dear Mr. Willse:

We approve the plugging plan for Morton Salt Roach-Baker No. 1 well with the following exceptions:

- 527
1. Step 3, if the top of the cavern is found higher than 880 feet the Commission should be notified prior to any further activity in the well.

You may be interested to see the enclosed sample log of the Roach-Baker No. 1 well. It shows that the top of anhydrite was found in the 790 - 800 foot sample. This is confirmed by the density log. You have shown top of the anhydrite at 670'. This is not important unless the top of the cavern is higher than you predict.

We approve the plan for plugging the Morton Salt Roach-Baker No. 2 with the following changes:

- Step 3 Run Cement Bond log all the way to the surface.
- Step 4 ...Evidence of qualification shall be provided to the Commission prior to running the log.
- Step 5 Make sure well is filled to the surface prior to perforating. If flow occurs after perforating, no further operations will take place until flow ceases. Any oil reaching the surface will be directed to a reserve pit and disposed of properly.

Mr. E. M. Willse

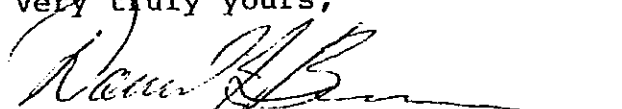
February 15, 1989
Page 2

Step 8 Perforate after consultation with the Commission representative on site.

Step 9 We do not approve placing cement with a dump bailer.

If you accept these changes, please sign the enclosed copy and return it to us.

Very truly yours,


Daniel J. Brennan
Executive Director

Enclosure

MORTON THIOKOL, INC.

Morton Salt Division



February 2, 1989

Mr. Daniel Brennan
Executive Director
Arizona Oil and Gas Commission
3110 North 19th Avenue
Suite 190
Phoenix, Arizona 85015

RE: Southwest Salt Company
Plugging #1 and #2 Wells

Dear Mr. Brennan:

Enclosed is our revised plugging plan for Roach-Baker #1⁵²⁷ and #2. Don't hesitate to call if I can assist you in your review. My phone number is 312/807-2500.

Please advise in writing when the plugging plans have been approved.

Sincerely,

E. M. Willise
Senior Project Engineer

cep/020189

Encl.

cc: D. R. Border
J. E. Goodbrake
M. E. Stover

Plugging Plan
Morton Salt - Roach-Baker #1

(527)

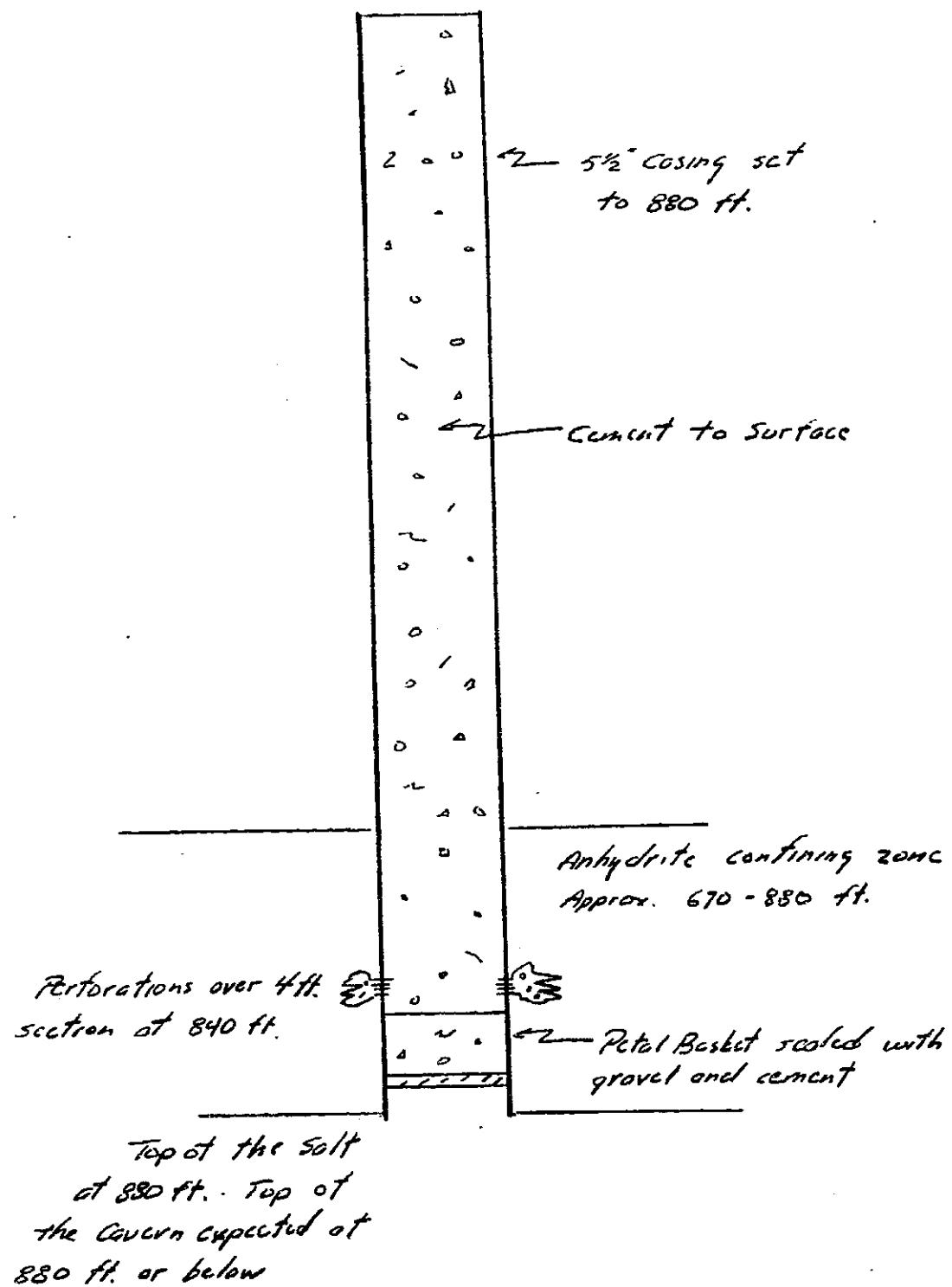
1. Clean up cement around 5-1/2" casing at surface and weld a wellhead in place in case a blow out preventer is needed.
2. Remove the 3-1/2" tubing down to 880 ft. with the following plan:
 - A. Drill out the 3-1/2" tubing so that a cutter may be run to 880 ft. and cut the tubing.
 - B. Cut tubing and remove with standard fishing tools.
 - C. Mill whatever tubing cannot be pulled.
3. Run a gamma ray log to determine that the top of the cavity is below 880 ft. This is the bottom of the 5-1/2" casing and the top of the salt. If the top of cavity is higher than ~~720~~ ft. the Oil and Gas Commission will be notified and an additional plan to seal this off will be devised. All expectations are that the cavity will be at 880 ft. or below and we will be able to continue with the next step. The confining zone up the salt is made up of anhydrite and runs from ~~779-670~~ to 880 ft. in this well. 880
4. Set a petal basket type plug as low in the 5-1/2" casing as possible (approximately 870 ft.). Drop 10 ft. of sand and gravel into the well to seal off the petal basket.
5. Perforate 5-1/2" casing with eight shots per foot over a four foot section. This will be done at approximately 840 ft., above the plug and as low as possible in the anhydrite confining zone above the salt. Eight shots per foot will probably be accomplished by two runs at four shots per foot.
6. Using tubing, break circulation and clean hole. Place 10-20 ft. of Class A or B or Type 2 cement on the plug. Cement will be purchased locally and mixed and pumped with rig equipment. It will be neat cement, mixed with water and no other additives. Wait on cement at least eight hours. As an alternate, if it seems more practical this small amount of cement may be placed with a dump bailer.
7. Tag top of cement. If cement is hard, proceed to the next step. If top of cement is not found repeat procedures as necessary until a hard cement plug is established in the hole.

8. Using cement mix as above, pump cement through the tubing to fill the well to surface (approximately 100 sacks). By filling the well to surface the weight of the cement will put 580 psi pressure on the perforations at 840 ft. This will accomplish any squeeze required.
9. Wait at least eight hours and tag top of cement. Refill with cement any volume that has been squeezed off into formation. Repeat until cement remains at surface after eight hours of waiting time.
10. Cut off of casing and install plugged well marker in accord with R12-7-127.

020189

8. Using cement mix as above, pump cement through the tubing to fill the well to surface (approximately 100 sacks). By filling the well to surface the weight of the cement will put 680 psi pressure on the perforations at 840 ft. This will accomplish any squeeze required.
9. Wait at least eight hours and tag top of cement. Refill with cement any volume that has been squeezed off into formation. Repeat until cement remains at surface after eight hours of waiting time.
10. Cut off of casing and install plugged well marker in accord with R12-7-127.

Martin Salt - Roach Baker No. 1
Completed Plug Job





Oil and Gas Conservation Commission

STATE OF ARIZONA

3110 N. 19th AVENUE, SUITE 190

PHOENIX, ARIZONA 85015

PHONE: (602) 255-5161

527

December 27, 1988

S. A. Medley
Morton Thiokol, Inc.
110 North Wacker Drive
Chicago, IL 60606-1555

Dear Mr. Medley:

We have reviewed your plans to plug and abandon the two wells in Glendale. We feel that the plans are too sketchy to approve (or to disapprove) as presented.

Using your submittal as a take-off point, we have added some of the detail we consider appropriate for a proposed plan of work. Enclosed is a copy of what we have done. We feel it is important to specify materials, mixing rates, and so on, to provide a specific guide to people in the field. At decision points, such as whether to set a packer or a petal basket, it is useful to set out the conditions under which one or the other should be set.

Don't consider that what we have done is exactly what we require; rather that it indicates the kind of detail that should be included. Diagrams are very useful and should be included in your plan.

While operators often have their in-house staff prepare such plans, we do accept plans prepared by industry consultants who specialize in such work. The plan used at the recent plugging of a bore hole at the Cal Gas facility adjacent to your operation was prepared by a consulting company and supervised by one of their people on the well site.

Thank you for your cooperation in the effort to get these wells plugged as quickly and effectively as possible.

Very truly yours,

D. J. Brennan

Daniel J. Brennan
Executive Director

Enclosure

PLUGGING PLAN

Morton Salt - Roach Baker #2

1. Remove 5" and 7" tubing down to 1,000 ft. If it will not come free by conventional means, run a freepoint and cut where tubing is free. May need to pull in sections.
2. Remove 8-5/8" liner. May need to cut in sections and remove as above.
3. Clean out 10 3/4" casing to 1050 feet.
4. Run Cement Bond Log from 1,000 feet to surface to determine where pipe is cemented.
5. Run a density interface log. Have log interpreted by a person qualified to analyze this type of log. Provide evidence of qualification of analyst.
6. If top of cavity is not found in density interface log, clean out 10 3/4" to TD and re-run density interface log.
7. If oil is found, perforate the 10 3/4" casing and remove all the oil. If no oil is found perforate at top of cavern and bail, swab or pump at least 20 barrels of fluid to demonstrate absence of oil. Refill cavern with brine.
8. Set a plug in 10 3/4" casing 3 feet above top of cavern. Use a standard bridge plug or petal basket type plug depending on which will best retain a cement plug in the casing. If casing is in good condition the bridge plug may suffice, otherwise the petal basket type plug may be necessary.
9. Using tubing, circulate to clean hole. Place 10' of class A or B or Type 2 cement on plug. If casing is in bad condition, use a salt cement, either a dry salt - dry cement mixture or mix cement with brine. Wait on cement 8 hours for non-salt cement, at least 24 hours for salt cement.
10. Tag top of cement. If cement is hard, proceed to next step. If top of cement is not found, clean out hole to bridge plug, tag plug, and repeat procedures as necessary until a cement plug is established in the hole.
11. Underream casing, or perforate with 8 shots per foot above top of cement plug.
12. Using a salt cement as described above, through tubing, squeeze perforations using between 500 pounds and 750 pounds pressure. Wait on cement 24 hours. Tag top of cement in casing, above top perforation. If cement is not found above perforations, repeat this step until it is found above perforations.

13. If logs indicate uncemented volumes behind 10 3/4" casing, perforated at indicated depths.
14. Fill casing through tubing, in stages with Class A or B or Type 2 cement to surface, allowing sufficient volumes to fill the void areas behind the pipe. Wait on cement 8 hours. Tag top of cement. If cement top has fallen, repeat this step until casing remains full to top after 8 hours hardening time.
15. Cut off casing and install plugged well marker in accord with R12-7-127.

MORTON THIOKOL INC.

Morton Salt Division



December 14, 1988

Certified Mail

Mr. Daniel Brennan
Executive Director
Arizona Oil and Gas Commission
3110 North 19th Avenue
Suite 190
Phoenix, Arizona 85015

RE: Southwest Salt Company
Plugging No. 1 and 2 Wells

Dear Mr. Brennan:

This letter is a follow-up to your telephone conversation with John Goodbrake, Dan Border and Ed Willse regarding plugging of wells R.B. nos. 1 and 2. Enclosed are plugging plans for the two wells. The plans include the procedures discussed and ensure the wells are properly plugged.

Please advise in writing when the plugging plans have been approved. We will proceed with the program once we receive the Oil and Gas Commission's approval.

Sincerely,

S. A. Medley
Manager of Environmental Affairs

cep/121288

Encl.

cc: D. R. Border
J. E. Goodbrake
E. M. Willse
M. E. Stover

Plugging Plan - Glendale No. 1

1. Clean up cement around 5½" at surface and weld a wellhead in place in case a blow out preventer is needed.
2. Remove the 3½" tubing down to 880 ft. with the following plan.
 - a. Drill out the 3½" tubing so that a cutter may be run to 880 ft. and cut the tubing.
 - b. Cut tubing and remove the rest with standard fishing tools.
 - c. Mill whatever tubing cannot be pulled.
3. Run a gamma ray log to determine the top of the cavity. Expect to find it at 880 ft. or below as that is the top of salt.
4. Set a plug in the 5½" casing at 870 ft. (10 ft. above the bottom of the casing). The plug will either be a standard bridge plug or a petal basket type plug depending on well conditions.
5. Perforate a 5 ft. section from 850 to 855 ft. Perforate with a 360° rotation with the purpose of providing an access (several perforations) for cement to be squeezed into the formation when the casing is filled with cement.
6. Run tubing and fill the well with cement from the plug to surface.



JUN 11 1987

O & O

Fidelity and Deposit Company of Maryland
611 Security Building—234 North Central
Phoenix, Arizona 85004-2275
602-254-9251

June 5, 1987

Attention: Mr. Dan Brennan
State of Arizona
Oil & Gas Conservation Commission
3110 N. 19th. Avenue, #190
Phoenix, Arizona 85051

Re: Bond #830⁶106 - Southwest Salt Co. an Arizona Corp.

Dear Mr. Brennan,

We have been the surety for the captioned bond since December 19, 1969. We would like our liability under this bond to be terminated. Please advise if we may proceed in cancelling our file.

I will await your early response. Your cooperation and assistance is greatly appreciated. If you should have any questions, please give me a call.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Jeri Echols'.

Jeri Echols

/je

6/24/87

R.Y. / Echols

Correct bond # is 8306106
Explained that bond will be eligible
for release when well No. 1 is plugged
& abandoned - will check back in
6 months to find out status of well

SUMMARY SHEET

October 1, 1976

From: John Bannister, Executive Secretary

Subject: Southwest Salt Company Operations at the Northeast Intersection of Glendale Avenue and Dysart Road, Maricopa County, Arizona

Issues: Potential danger to Luke Air Force Base housing area

Alternatives:

1. Instruct Environmental Section of Health Department to accomplish surveillance.
2. Discuss situation with Office of Mine Inspector as to what authority and jurisdiction they may have in this particular case.

Position: Take whatever action is indicated by Governor Castro

Legal Opinion:

Letter opinion dated November 13, 1969 to Mr. Stan Womer, Office of the Governor, from Mr. John M. McGowan, II, Special Assistant Attorney General

October 1, 1976

Memo: Robert Hathaway
Office of the Governor

From: John Bannister
Executive Secretary

Enclosed is the "official" report requested by you concerning the Southwest Salt Company's operation. It is my understanding that Luke Air Force Base is primarily concerned with the salt cavern created in the mining operations. Their fear, as near as I can determine, is that the cavern might be under the Luke housing area on the west side of Dysart Road and that resulting subsidence might hurt the area. There is but little foundation for this worry. I doubt if there is sufficient water available to create a cavern of the size it would take to cause such an action, however, through logs and other tests, the size and location of the cavern could be determined.

Undoubtedly (and unofficially) I suspect that the Southwest Salt Company's operations involve leaking casing and leaching at the top of the cavern into the anhydrite structure capping the salt. In short, we could be looking at a can of worms.

Jerry Grott, the operator of this area, has been less than cooperative with others, however this Commission got along relatively well with him. Inasmuch as we are dealing with totally private property, the right of the State to demand certain actions is questionable, particularly in view of the fact that we are dealing with a mining operation. John McGowan's opinion was written to give some legal crutch to the Commission's operations and I seriously doubt would stand up in a court case. I am not suggesting that the Governor back off, but merely that we proceed extremely slow and stop as soon as Luke Air Force is satisfied.

Gene Alleman is the project engineer who is constructing the Cal Gas caverns. I feel a conference with him and Luke would satisfy them as to the lack of danger from Southwest's operations.

Memo: Mr. Robert Hathaway
October 1, 1976
Page 2

I would stress again that this is legally a mining operation and I feel we would perhaps be on safer ground if surveillance by the Division of Environmental Health of the Arizona Health Services Department were left intact and no surveillance unusual to mining operations were placed in force here.

ORGANIZATION REPORT

RECEIVED

FEB 14 1980

Full Name of the Company, Organization, or Individual

Southwest Salt Company

Post Office Address (Box or Street Address)

P.O. Box 1237 Litchfield Park, AZ 85340

Plan of Organization (State whether organization is a corporation, joint stock association, firm or partnership, or individual)

Corporation

Purpose of Organization (State type of business in which engaged)

Salt Mine

If a reorganization, give name and address of previous organization.

If a foreign corporation, give (1) State where incorporated		(2) Name and post office address of state agent	(3) Date of permit to do business in state
Principal Officers or Partners (if partnership) NAME		TITLE	POST OFFICE ADDRESS
G. J. Grott		President	P.O. Box 1237, Litchfield Park AZ 85340
Norman Fain		Vice President	see below
Mr. George Hill		Sec'y Treas	see below

DIRECTORS NAME		POST OFFICE ADDRESS
Mr. Norman Fain		c/o Prescott Country Club, Prescott, AZ 86301
Mr. George Hill		34 W. Monroe, Suite 512, Px. AZ 85003
Mr. Garvin Turner		4808 No. 22nd St., Suite 202, Px. AZ 85016
Dr. Robert B. Leonard		550 W. Thomas Rd. Px. AZ 85013
Mr. Charles McDonald		P.O. Box 2339, Prescott, AZ 86301

CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the President of the Southwest Salt Company (company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.

Gerald J. Grott
Signature

2/12/80
Date

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION
Organization Report
File One Copy

Form No. 1

527

October 1, 1976

Honorable Raul Castro
Governor of Arizona
State Capitol
Phoenix, Arizona

Re: Southwest Salt Company Operations at the North-
east Intersection of Glendale Avenue and Dysart
Road, Maricopa County, Arizona

Dear Governor Castro:

During the latter part of September or the early part of October, 1969, Governor Jack Williams was contacted by Luke Air Force Base concerning the possible contamination of the water aquifer serving Luke Field from the operations of Southwest Salt Company. Governor Williams ordered the Oil and Gas Conservation Commission to take the necessary steps to monitor the mining operations at the captioned location.

Accordingly, on October 30, 1969 the Commission held a meeting at its offices. Present were members of the Southwest Salt Company, Luke Air Force Base, United States Geological Survey, Federal Water Pollution Control, United States Water Conservation Laboratory, University of Arizona Hydrology and Water Resources, Arizona Bureau of Mines, Arizona State Department of Health, Arizona Land Department, a representative of Goodyear Farms, a member of Engineers Testing Laboratory, and members of the Oil and Gas Conservation Commission.

It was unanimously decided that Engineers Testing Laboratory should be hired to conduct an extensive investigation of the area of Southwest mining operations. An amount of \$1,700 was made available for this purpose. As a result of many core holes and other tests done by the laboratory, the results of which were made available to all members meeting on October 30th, it was determined that the operations did not imperil the water aquifer of the area at that time, however it was felt a continuing surveillance should be maintained. Water wells that could be located within one mile of the operational site were sampled and analyzed to establish a norm should the question of contamination arise.

Governor Raul Castro
October 1, 1976
Page 2

The area was studied on the ground and from air photos, inasmuch as some subsidence had been noted. As part of the prevention surveillance established, a trench was dug on the east side of the Southwest Salt Company ponding area so that some cracking, apparently caused by subsidence, could be detected prior to entering the pits. Should this occur, the ability to empty the impounded brine back into the salt cavern was present. This has not occurred as of this date.

In addition to these precautions, permanent directional holes were drilled in the ponding area so that a nuclear probe could be inserted periodically to detect unusual accumulations of moisture beneath the ponding area.

On November 13, 1969, in response to a request from the Governor's Office, an Attorney General Opinion was rendered that the Oil and Gas Conservation Commission have authority to monitor this type of operation, if needed, and that the owner of the operation could challenge the State's authority through a lawsuit.

This Commission maintained surveillance over these operations to everyone's satisfaction. The wells drilled in connection with this operation were permitted by this Commission and were placed under bond and remain so to this day. Currently, this Commission exercises no active jurisdiction on this operation and is concerned solely with maintaining the well bonds in the event it is necessary for the State to plug these wells. It should be noted that this function and bond could be surrendered to the Division of Environmental Health.

On March 1, 1972, pursuant to a directive from Governor Williams, the Commission surrendered its authority to supervise and monitor these operations to the Division of Environmental Health of the Arizona Health Services Department.

In September, 1973, California Liquid Gas Corporation began operations north of the Southwest Salt Company's area to create storage caverns in the salt area for propane storage. Ultimately, there will be three caverns created. This operation is being conducted under the supervision of the Oil and Gas Conservation Commission and has involved the Maricopa County zoning authorities.

Should the Oil and Gas Conservation Commission be ordered to resume surveillance of the caverns created by Southwest Salt Company, it would be necessary to run a sonar caliper log and other tests to determine the lateral extent of the caverns. The

Governor Raul Castro
October 1, 1976
Page 3

vertical extent could be determined by simply lowering a wire line. Other tests to determine potential casing leakage, etc., should be run, depending on the availability of funds. The cost would be approximately \$2,500 per log. It is not known if Luke Air Force or Southwest Salt Company would be willing to contribute funds toward testing and to reestablish a surveillance system. The Oil and Gas Commission has no funds for this purpose. However, I should mention that approximately \$10,000 of our Personal Services funds has been ordered to be reverted to the General Fund at the end of the fiscal year - perhaps a transfer of these funds could be made for this purpose. In addition, \$2,700 was allocated to this Commission for a joint project involving National Aeronautics and Space Administration (NASA) and the University of Arizona. These funds will probably revert to the General Fund since NASA was unable to secure its portion of the project funds.

Should you have any questions, please advise.

Respectfully submitted,

John Bannister
Executive Secretary

JB/vb
Enc.

Governor Raul Castro
October 1, 1976
Page 3

vertical extent could be determined by simply lowering a wire line. Other tests to determine potential casing leakage, etc., should be run, depending on the availability of funds. The cost would be approximately \$2,500 per log. It is not known if Luke Air Force or Southwest Salt Company would be willing to contribute funds toward testing and to reestablish a surveillance system. The Oil and Gas Commission has no funds for this purpose. However, I should mention that approximately \$10,000 of our Personal Services funds has been ordered to be reverted to the General Fund at the end of the fiscal year - perhaps a transfer of these funds could be made for this purpose. In addition, \$2,700 was allocated to this Commission for a joint project involving National Aeronautics and Space Administration (NASA) and the University of Arizona. These funds will probably revert to the General Fund since NASA was unable to secure its portion of the project funds.

Should you have any questions, please advise.

Respectfully submitted,

John Bannister
Executive Secretary

JB/vb
Enc.

ARIZONA DEPARTMENT OF HEALTH SERVICES

Division of Environmental Health Services

PAUL H. CASTRO, Governor
SUZANNE DANDOL, M.D., M.P.H., Director

June 9, 1976

RECEIVED

O & G CONS. COMM.

Ira L. Kimes, Jr., Colonel, USAF
Commander
Department of the Air Force
Headquarters 58th Combat Support Group (TAC)
Luke Air Force Base, Arizona 85309

Dear Colonel Kimes:

This is to acknowledge receipt of your letter of May 24 and Lt. Col. Ferrell's letter of June 3, 1976 regarding salt mining operations in the vicinity of Glendale and Dysart Avenues near Luke Air Force Base.

On June 3rd, Mr. Ed Garthe of this office discussed this subject with a number of Base officials gathered together in your office.

Southwest Salt Company continues to conduct their mining operation at the northeast corner of the intersection mentioned above. Furthermore, the Arizona Oil and Gas Conservation Commission informs us that a similar operation has begun due north of and nearly contiguous to the aforementioned operation. The California Gas Company is conducting this second mining activity.

The first operation (Southwest Salt Co.) involves production of salt as its primary goal. The activity of the California Gas Company reportedly is for the purpose of creating storage capacity for propane gas. Apparently the salt solution from this operation is delivered to the Southwest Salt Company for processing.

Whether either cavity extends beneath military family housing at Luke Air Force Base has not been verified. The mining operations are licensed by the Arizona Oil and Gas Conservation Commission.

Concerning whether adequate safeguards and precautions are being taken regarding ground faults and subsidence and dangers of gas leakage or explosion, as Mr. Garthe stated on June 3rd, our Department has no authority in this area. Since the facilities are licensed by the Arizona Oil and Gas Conservation Commission, you may wish to pursue this matter directly with them.

Possible pollution of the groundwater supply is an area of responsibility of the Department of Health Services, and it is exercised by our Bureau of Water Quality Control. Dr. Ron Miller, Chief of the Bureau of Water Quality Control, informs me that surveillance of the salt mining will be

Ira L. Kimes, Jr., Colonel, USAF
June 9, 1976
Page 2

included in a groundwater monitoring program now under development. In the meantime, the Bureau of Water Quality Control will review Southwest Salt Company records and evaluate the mass balance for water and salt.

Sincerely,

R. Bruce Scott
R. Bruce Scott, P.E.
Assistant Director

cc: Arizona Oil and Gas Conservation Commission
Dr. Ron Miller
Mr. Ed Garthe

Copy - Arizona Department of Health Services; State Health Building; Phoenix, Arizona 85007

June 20, 1975

RECEIVED

JUN 25 1975

O & G CONS. COMM.

Mr. G. J. Grott, President
Southwest Salt Company
P.O. Box 1237
Litchfield Park, Arizona 85340

Dear Mr. Grott:

This is to acknowledge your letter dated June 13, 1975.

This Department would like to visit your new well site to observe progress.

A representative will be in contact with you within the next week to arrange for a visit.

Sincerely,

S. Von Roberts

S. Von Roberts, B.S.Ch.E.
Bureau of Water Quality Control

SVR:rl

cc: Arizona Oil and Gas Commission ✓

W A

CAL GAS

A Dillingham Company

May 23, 1975

Mr. John Bannister
State of Arizona
Oil & Gas Conservation Commission
8686 N. Central Avenue
Phoenix, Arizona 85020

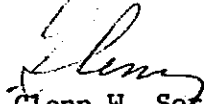
Dear John:

Thank you very much for the use of your attached copy of the Soil Investigation at the Southwest Salt Company plant.

I appreciate the time you and Bill Allen gave me last Tuesday. Your comments and suggestions will be helpful in the further development of our Luke Salt Storage Project.

My kindest regards.

Sincerely,


Glenn W. Sorensen
Vice President, Engineering & Construction

GWS/ys

Enclosure

RECEIVED

MAY 27 1975

O & G CONS. COMM.



ARIZONA DEPARTMENT OF HEALTH SERVICES

Division of Environmental Health Services

RAUL H. CASTRO, Governor
J. L. SCHAMADAN, M.D., Director

MAY 12 1975

Mr. John Bannister
Executive Secretary
Oil and Gas Conservation Commission
8686 N. Central Ave., Suite 106
Phoenix, Arizona 85020

Re: Southwest Salt Company

Dear Mr. Bannister:

Mr. S. Von Roberts of this Department reviewed the operations and current status of the subject company on May 2, 1975 with Mr. G. J. Grott, owner, and Mr. Bill Allen of your agency.

The resultant review, engineering and geological discussion satisfied this Department that the possibility of any transmission of brine leakage into fresh water aquifers is very remote and would most certainly be first noticed at the site of the mining operation before any such occurrence.

This Department is aware of the potential hazard therein, however, and will maintain periodic surveillance over the operation to detect the occurrence of any fresh water aquifer contamination.

Sincerely,

James D. Goff, P.E.
James D. Goff, P.E.
Assistant Director

cc: Maricopa County Health Dept.
Mr. G. J. Grott, Southwest Salt Co.
C.R.O. - Maricopa County (misc.)

RECEIVED

MAY 13 1975

O & G CONS. COMM.

(See memo on other side)

527 & 548

State Health Building

1740 West Adams Street

Phoenix, Arizona 85007

February 25, 1974

Mr. Ed Garthe
Environmental Health Services
Health Department
1740 West Adams
Phoenix, Arizona 85007

Re: Southwest Salt Company's Operation, Glendale Avenue
and Dysart Road

Dear Ed:

As you are aware, surveillance of the Southwest Salt Company's operations has been turned over to your department. Again, as you are aware, an operation to create storage caverns for propane is under way in this area. This storage project is under the jurisdiction of this Commission.

We recently inspected the storage project and noticed that the Southwest Salt Company has created additional evaporation areas to the west of the old ponds. I feel this condition should be called to your attention.

Should you have any questions, we will be glad to discuss this with you.

Sincerely,

John Bannister
Executive Secretary

JB/vb



OFFICE OF
Oil and Gas Conservation Commission
STATE OF ARIZONA
4515 NORTH 7TH AVE.
PHOENIX, ARIZONA 85013
PHONE: (602) 271-5161

March 20, 1972

Mr. Chuck Sheffing
Shell Oil Company
P. O. Box 1200
Farmington, New Mexico 87401

Dear Chuck:

Attached is miscellaneous information on the Southwest Salt Company wells and the Kerr-McGee Red Lakes Potash Test.

The logs on these wells have been delivered to Acme Blueprint for copying. They will send your copies directly to you. They are being reproduced on a scale of 1 inch = 100 feet.

If we can be of further assistance, please advise.

Very truly yours,

W. E. Allen, Director
Enforcement Section

WEA/r1b

Encs.

Dr. J. J. Wright
Department of Geology
University of Arizona
Tucson, Arizona 85721

Mr. E. L. Marcum, Col. USAF
Vice Commander
Luke Air Force Base
Litchfield, Arizona 85301

Mr. Lewis F. Scott
Engineering Testing Lab. Inc.
2525 East Indian School
Phoenix, Arizona 85016

Major Fred Hancher
Luke Air Force Base
Litchfield, Arizona 85301

Mr. L. R. Kister
U. S. Geological Survey
2555 East 1
Tucson, Arizona 85716

Mr. Herbert H. Schumann
U. S. Geological Survey
Room 5017 Federal Building
Phoenix, Arizona 85025

Dr. Hasan Qashu
Hydrology & Water Res. Dept.
University of Arizona
Tucson, Arizona 85721

Mr. John Savoy
Hill & Savoy
512 Arizona Bank Building
Phoenix, Arizona 85003

Dr. West Peirce
Arizona Bureau of Mines
University of Arizona
Tucson, Arizona 85721

Mr. Joseph E. Obr
Water Pollution Control
4019 North 33rd Avenue
Phoenix, Arizona 85017

Mr. Fritz Ryan
State Land Department
1624 West Adams, Room 407
Phoenix, Arizona 85007

*Sent memos to
the following
people. 3-10-72*

Mr. Lloyd E. Myers
U. S. Water Conserv. Lab
4331 East Broadway
Phoenix, Arizona 85040

Mr. Samuel F. Turner
Samuel F. Turner & Assoc.
350 East Camelback Road
Phoenix, Arizona 85012

The Honorable Jack Williams
Governor
State of Arizona
Phoenix, Arizona 85007

Mr. Michael Pantano
2836 West Orchid Lane
Phoenix, Arizona 85021

Mr. F. S. Nakayama
4331 East Broadway
Phoenix, Arizona 85040

Mr. Robert H. Follett
State Department of Health
3rd Floor
1624 West Adams Street
Phoenix, Arizona 85007

#527

Mr. Jim V. Rouse
U.S. Department of Interior
FWPCA, Pacific SW Region
Colorado River-Bonneville Basins Office
Room 415, Building 22
Denver Federal Center
Denver, Colorado 80225

Mr. Glenn Hebert
Civilian Engineer
Luke Air Force Base
Litchfield Park, Arizona 85301

Mr. G. Parkman
C/O Goodyear Farms
Litchfield Park, Az. 85301

Mr. G. W. Bressey
C/O Goodyear Farms
Litchfield Park, Az. 85301

Mr. Forrest L. Stroup
6727 North 23 Drive
Phoenix, Arizona 85015

Mr. Bill King
P. O. Box 1950
Phoenix, Arizona 85001

Mr. Bert Thoressex
U.S.G.S.
230 North 1 Avenue
Phoenix, Arizona 85004



OFFICE OF
Oil and Gas Conservation Commission
STATE OF ARIZONA
4515 NORTH 7TH AVE.
PHOENIX, ARIZONA 85013
PHONE: (602) 271-5161

March 6, 1972

Mr. Edmund C. Garth
Assistant Commissioner for
Environmental Health Services
4019 North 33rd Avenue
Phoenix, Arizona 85017

Dear Mr. Garth:

The Oil and Gas Conservation Commission has been informed by a Directive from the Governor's Office dated, March 1, 1972, that the responsibility of monitoring and surveillance of the Salt Mining Operation, located at Glendale Avenue and Dysart Road, has been placed with your Department.

With the transfer of this responsibility from the Oil and Gas Commission to your Agency, an actuality, we are submitting our files on this operation containing in part the following:


1. Soil Investigation Reports Conducted by Engineers Testing Laboratories, Inc.
2. Suggested Program for Safeguarding Against Soil Pollution by Samuel F. Tunner, Consulting Geologist and Engineer.
3. Monthly Production Reports Submitted by Southwest Salt Company.
4. Miscellaneous Correspondence.
5. Photographs of the Salt Ponds and Surrounding Area.
6. Reports of Meeting With Interstate Parties After the Commission Had Been Assigned the Responsibility of Supervising the Subject Operation.
7. Copies of Well Records.
8. Water Analyses of Nearby Water Wells.
9. Master Thesis by Omar Izzat Touqan.

As was discussed during recent meetings in order to keep the two existing wells under bond, the Oil and Gas Commission will retain the responsibility of these wells.

Page 2
Mr. Edmund C. Garth
March 6, 1972

If this office can be of any assistance, please give us a call.

Very truly yours,



W. E. Allen, Director
Enforcement Section

WEA/rlb

Enc.

RECEIVED FILES ON SOUTHWEST SALT COMPANY

Mar 6 1972
(date)

Edmund C. Garth
(signature)

March 6, 1972

Mr. Edmund C. Garth
Assistant Commissioner for
Environmental Health Services
4019 North 33rd Avenue
Phoenix, Arizona 85017

Dear Mr. Garth:

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#527

Page 2

Mr. Edmund C. Garth
March 6, 1972

If this office can be of any assistance, please give us a call.

Very truly yours,

W. E. Allen, Director
Enforcement Section

WEA/rlb

Enc.

RECEIVED FILES ON SOUTHWEST SALT COMPANY

(date)

(signature)



JACK WILLIAMS
GOVERNOR

OFFICE OF THE GOVERNOR
STATE HOUSE
PHOENIX, ARIZONA 85007

March 3, 1972

RECEIVED

MAR 6 1972

O & G COM. 1972

Mr. William E. Allen
Oil and Gas Commission
4515 N. 7th Avenue
Phoenix, Arizona 85013

Dear Mr. Allen:

As a result of the conference with Mr. Garthe on February 3, 1972, I believe the time has come to transfer the monitoring of the salt pooling project, along with the associated funds, to the Health Department as agreed.

The effective date of transfer will be March 1, 1972. Attached is a proposed agreement between the two agencies which should be modified if necessary, and approved by the Attorney General.

Sincerely,

Laurence M. Bloom

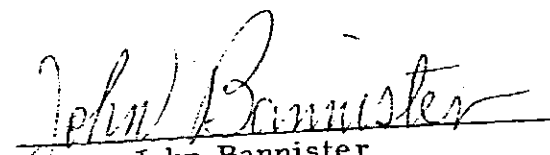
Laurence M. Bloom
Administrative Aide

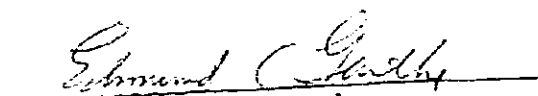
LMB:jh
Enc.

cc: Mr. Edmund C. Garthe

AGREEMENT TO TRANSFER MONITORING
OPERATION FROM THE OIL AND GAS
COMMISSION TO THE HEALTH DEPARTMENT

As of March 1, 1972 the Health Department will be the responsible agency to carry out the monitoring of the salt pooling operation near Luke Air Force Base. The Oil and Gas Commission will transfer to the Health Department all records, accounts, and funds relating to the monitoring.


John Bannister
Oil and Gas Commission


Edmund Garthe
Health Department

30th Legislature
2nd Regular Session

AN ACT

RELATING TO PUBLIC HEALTH AND SAFETY; AUTHORIZING THE DEPARTMENT OF
HEALTH TO REQUIRE MONITORING OF WATER POLLUTION SOURCES, AND
AMENDING SECTION 36-1863, ARIZONA REVISED STATUTES.

1 Be it enacted by the Legislature of the State of Arizona:

2 Section 1. Section 36-1863, Arizona Revised Statutes, is
3 amended to read:

4 36-1863. Inspections and investigations; maintenance of
5 records; MONITORING AND CONFIDENTIALITY

6 A. The department or its duly authorized representative
7 shall have the power to enter at reasonable times upon any private
8 or public property which is the source of waste or is reasonably
9 believed to be the source of waste being discharged into waters of
10 the state, and the owner, managing agent or occupant of any such
11 property shall permit such entry for the purpose of inspecting
12 and investigating conditions relating to pollution or the possible
13 pollution of any waters of the state, and to have access to such
14 records as the department may require under subsection B of this
15 section.

16 B. The department may require the maintenance of records
17 relating to the operation of disposal systems, and any authorized
18 representative of the department may examine and copy any such
19 records or memoranda pertaining to the operation of disposal
20 systems. Copies of such records shall be submitted to the

1 department upon its request.

2 C. THE OWNER, LESSEE OR OPERATOR OF A SOURCE OF WASTES
3 SHALL PROVIDE, INSTALL, MAINTAIN, AND OPERATE SUCH MONITORING
4 DEVICES AS ARE REASONABLE, NECESSARY, AND REQUIRED TO DETERMINE
5 COMPLIANCE IN A MANNER ACCEPTABLE TO THE DEPARTMENT AND SHALL
6 SUPPLY MONITORING INFORMATION AS DIRECTED IN WRITING BY THE
7 DEPARTMENT. SUCH DEVICES SHALL BE AVAILABLE FOR INSPECTION AT
8 ALL REASONABLE TIMES.

9 D. ANY RECORDS OR OTHER INFORMATION FURNISHED TO OR
10 OBTAINED BY THE DEPARTMENT CONCERNING ONE OR MORE SOURCES OF
11 WASTE WHICH RECORDS AND INFORMATION RELATE TO PRODUCTION OR
12 SALES FIGURES OR TO THE PROCESSES OR PRODUCTION UNIQUE TO THE
13 OWNER OR OPERATOR, OR WHICH WOULD TEND TO ADVERSELY AFFECT THE
14 COMPETITIVE POSITION OF SUCH OWNER OR OPERATOR, SHALL BE ONLY
15 FOR THE CONFIDENTIAL USE OF THE DEPARTMENT IN THE ADMINISTRATION
16 OF THIS CHAPTER, UNLESS SUCH OWNER OR OPERATOR SHALL EXPRESSLY
17 AGREE TO THEIR PUBLICATION OR AVAILABILITY TO THE PUBLIC. NO
18 PROVISION OF THIS SECTION SHALL BE CONSTRUED TO PROHIBIT THE
19 APPROPRIATE GOVERNMENTAL AGENCY FROM PUBLISHING QUANTITATIVE
20 AND QUALITATIVE STATISTICS PERTAINING TO THE DISCHARGE OF WASTES.

21

22

23

24 2/3/72

25

July 8, 1970

Mr. Gerald J. Grott
Southwest Salt Company
P. O. Box 1237
Litchfield Park, Arizona 85340

Re: Southwest Salt Company #1 Strat
SW/4 SW/4 Sec. 2-T2N-R1W
Maricopa County
Our File #527

Dear Mr. Grott:

I was on your location today hoping to visit with Phillip Meeske; however, I missed Mr. Meeske. While there I noticed that the rig had been moved from your #1 well and was set up at a point near the northwest corner of pond #4. Drilling operations have not commenced.

I talked briefly with a Mr. Kimura(?). I believe that he is the driller on the rig. At the time I spoke with him, he and his helper were checking the depth of the salt in the ponds.

Since the Oil and Gas Conservation Commission only recently became involved in your operations, it is thought that this would be a good time to review the required procedures.

Before drilling operations are started, it will be necessary that you secure a bond in the amount of \$5,000 for this well; make application for drilling permit, the charge for this permit is \$25; and furnish the Commission with a certified plat indicating the exact location of the well. After these initial steps have been complied with, the drilling can proceed in an orderly manner. Of course, we will need samples, well logs,

INSTRUCTIONS TO DELIVERING EMPLOYEE	
<input type="checkbox"/> Show to whom, date, and address where delivered	<input type="checkbox"/> Deliver ONLY to addressee
(Additional charges required for these services)	
RECEIPT	
Received the numbered article described below.	
REGISTERED NO.	SIGNATURE OR NAME OF ADDRESSEE (Must always be filled in)
CERTIFIED NO. 931850	1 <i>Gerald J. Grott</i>
INSURED NO.	2 SIGNATURE OF ADDRESSEE'S AGENT, IF ANY <i>By P. Kimura</i>
DATE DELIVERED 7/9/70	3 SHOW WHERE DELIVERED (only if requested) <i>S</i>

c55-16-71549-10 a7o

CERTIFIED MAIL

Page 2
Mr. Gerald J. Grott
July 8, 1970

and various reports of your activities as to drilling progress.

My purpose in visiting your location today was to discuss your #1 well with Mr. Meeske. We are very concerned with the possibility that the lower zones in this well are thieving fresh water from the water producing zones above. Even though the 6" casing is cemented through these water bearing sands, there is a very good possibility that there is channeling around the casing which will cause the lower zones to thief water from above.

Unless you can furnish this Commission with definite proof that there is no communications between the water producing formation and the lower formation, you will be required to set a plug below the water sand, perforate this zone, and cement squeeze the formation in order to thoroughly protect the water producing strata.

We fully realize, Mr. Grott, that the outlined procedure is fairly expensive; and, it isn't our intention to cause undue hardship to any operator. However, our first and primary concern is to protect the natural resources within the State. Should you desire, you may plug your #1 well and following a satisfactory plugging operation, your bond could, I believe, be transferred to your #2 well.

Please arrange to furnish the Commission with the above listed requirements prior to starting drilling operations; and, also advise us when you can plug your #1 well or at least when you will be ready to squeeze cement the fresh water sand. The Commission is very anxious to have this done within the next two weeks.

If you wish to discuss any of the above requirements, please call or come by the office.

Very truly yours,

W. E. Allen
Director of Enforcement Section

WEA:jd

527

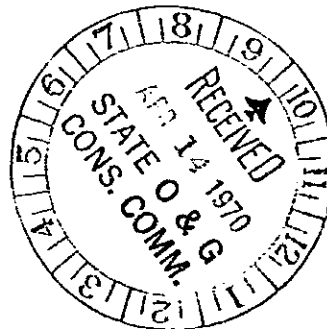


OFFICE OF
Oil and Gas Conservation Commission
STATE OF ARIZONA
ROOM 202
1824 WEST ADAMS
Phoenix, Arizona 85007
PHONE: 271-5161

April 7, 1970

Mr. Gerald J. Grott
Southwest Salt Company
P. O. Box 1237
Litchfield Park, Arizona 85340

Re: Southwest Salt Company #1 Strat
SW/4 SW/4 Sec. 2-T2N-R1W
Maricopa County
Our File #527



Dear Mr. Grott:

By letter of March 13, 1970, we requested your co-operation in collecting a set of samples on the captioned well and also in supplying this office with a report giving the formation tops. Will you please comply and give us these things as soon as possible.

Sincerely,

John Bannister
John Bannister
Executive Secretary

jd John: As of Apr 8, 1970 I visited with Mr. Wesley Plaine who now has the samples from the well - Please consider these as your samples. As for formation tops, I do not know what these are - Top of salt is 880' which coincides with the top of Lake Formation, I think. Thank you, Grott

April 7, 1970

Mr. Gerald J. Grott
Southwest Salt Company
P. O. Box 1237
Litchfield Park, Arizona 85340

Re: Southwest Salt Company #1 Strat
SW/4 SW/4 Sec. 2-T2N-R1W
Maricopa County
Our File #527

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please comply and give us these things as soon as
possible.

Sincerely,

John Bannister
Executive Secretary

jd

ADDRESSES

Mr. Gerald J. Grott
Southwest Salt Company
P. O. Box 1237
Litchfield Park, Arizona 85340

Dr. Wes Peirce
Arizona Bureau of Mines
University of Arizona
Tucson, Arizona 85721

Major Fred Hancher
Luke Air Force Base
~~XXXXXXX~~, Arizona 85301

Mr. Joseph E. Obr
Water Pollution Control
4019 North 33rd Avenue
Phoenix, Arizona 85017

Mr. L. R. Kister
U. S. Geological Survey
2555 East 1
Tucson, Arizona 85716

Mr. Fritz Ryan
State Land Department
1624 West Adams
Room 407
Phoenix, Arizona 85007

Mr. Herbert H. Schumann
U. S. Geological Survey *Room 5017*
~~201 East Roosevelt~~ *Federal Bldg.*
Phoenix, Arizona ~~85004~~ *85025*

Mr. Lloyd E. Myers
U. S. Water Conservation Lab
4331 East Broadway
Phoenix, Arizona 85040

Dr. Hasan Qashu
Hydrology & Water Resources Dept.
University of Arizona
Tucson, Arizona 85721

Mr. Samuel F. Turner
Samuel F. Turner & Associates
350 East Camelback Road
Phoenix, Arizona 85012

Mr. Jim V. Rouse
US Dept of Interior
FWPCA, Pacific SW Region
Colorado River-Bonneville Basins Office
Room 415, Bldg. 22
Denver Federal Center
Denver, Colorado 80225

HONORABLE JACK WILLIAMS
GOVERNOR
STATE OF ARIZONA
Phoenix, AZ 85007

Dr. I. I. Wright
Dept. of Geology
University of Arizona
Tucson, Az 85721

527

Salt Pollution

Name	Representing	Address
Mr. Fred Hawners	LUKE AFB	LUKE AFB ARLZ
MICHAEL PANTANO	LUKE AFB	2836 W. ORCHID LANE, PHX
L. E. KISTER	U.S. GEOLOGICAL SURVEY	P.O. Box 4070 TUCSON ARLZ
Burt H. Felt	State Dept of Health	Phoenix
F. S. Nakayama	U.S. Water Conservation Lab	4331 E. Broadway, PHX
G. J. GERT	SOUTHWEST AIR CO	P.O. Box 1237, Littlefield Fort ARLZ
Dr. Munk	Seaboard Salt Co	" " "
Levin Scott	Eng Testing Lab	Phoenix
Dr. Hiram Gardner	Water & Hydro Dept	Tucson

U
A
E
8

Mail Address:

Mr. Gerald J. Grott
Southwest Salt Company
P.O. Box 1237
Litchfield Park, Ariz.
85340

T
W
(G

Salt Co.
935-5289 site OK
935-9209

Room 520 Ag. Science
Bldg (South of clock
in Student Union
Bldg)

10-69. He must clear

Dr. MIKE PARSON
Dept. of Chem. (961-3461)
965-3321

11-13-69 Parson
advised that NSU
cannot & will not
perform this work.
JB

20 Wells - appx 1 gal
2 Salt Brines -

Lewis Scott 264-4781

Luke Air Base 935-7411

Hasan K. Qushu V of A 884-2970

Dept Base Comdr.

(Col. Thielem)

May 11/13/69
2135

John Savoy 34 W Monroe 258-7523

U. of A.

Agri. Chemical & Soil Dept

Eddy Carpenter

884 1381

Room 520 Ag. Science

Bldg (South of clock

in Student Union

Bldg)

Talked to Carpenter 11-10-69. He must clear
with Dr. Fuller.

(Gordon Dutt - Wes' friend)

A.S.U.

Dr. MIKE PARSON

Dept. of Chem. (961-3461)

965-3321

11-13-69 Parson

advised that ASU

cannot & will not

perform this work.

JB

20 Wells - approx 1 gal

2 Salt Brines -

Lewis Scott 264-4781

Luke Air Base 935-7411

Hasan K. Qashu U of A 884-2970

Dept Base Lewis.

(Col. Thielem)

May Hancher
Oct 2135

John Savoy

34 W Monroe

258-7523

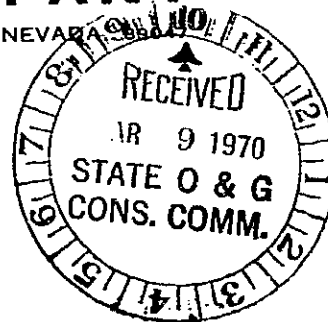


FOOTE MINERAL COMPANY

SILVER PEAK OPERATION

SILVER PEAK, NEVADA

March 16, 1970



Salt File

Mr. John Bannister
Executive Secretary
Oil and Gas Conservation Commission
State of Arizona
Room 202, 1624 West Adams
Phoenix, Arizona 85007

Dear Mr. Bannister:

We have received your letter of March 3, 1970, enclosing the Engineers Testing Lab report, and we also received your letter of March 6 enclosing supplemental information together with expanded field testing of the ground water adjacent to the brine evaporation ponds located near Phoenix.

All of this will be of great assistance to us in finding a solution to our seepage monitoring in the Clayton Valley operation, and we certainly appreciate your cooperation.

Very truly yours,

FOOTE MINERAL COMPANY

Page Edwards
Page Edwards
General Manager
Western Operations

PE:lm

cc: Richard F. Henshaw
Frank J. Rozich

527

March 13, 1970

Mr. Gerald J. Grott
Southwest Salt Company
P. O. Box 1237
Litchfield Park, Arizona 85340

Re: Southwest Salt Company #1 Strat
T2N, R1W, G & SRM
Sec. 2: SW/4 SW/4
Maricopa County
Permit #527

Dear Mr. Grott:

This office is still in need of samples on the captioned well. We would appreciate receiving any information you may have about them. Also, while you are trying to find the samples, we would appreciate it if at your earliest convenience you would submit a report giving us the formation tops on this well.

Sincerely,

John Bannister
Executive Secretary

jd

March 6, 1970

Foote Mineral Company
Attention: Mr. Page Edwards
Silver Peak, Nevada 89047

Gentlemen:

I am enclosing for your information a copy of a supplemental report made to this Commission by Engineers Testing Laboratories, Inc., concerning the ponding of salt water brine near Phoenix. As I previously advised you, a meeting was held March 5, 1970, at the Commission's office. The results of this meeting are being enclosed for you in the form of a brief and a letter of instructions to Southwest Salt Company. In arriving at the instructions we issued to Southwest Salt Company, our consideration was particularly that of subsurface pollution. I might add that surface pollution which may occur has been put under the control of the State Health Department.

Briefly, it was the feeling of all concerned parties who met that our proposal to periodically drill holes throughout the ponding area and collect and analyze the soil samples would suffice to warn us should potential seepage be threatened. As you will note from the original report, seepage which may occur in this area would be slow due to the subsurface soil conditions; consequently, we feel that at this time a yearly monitoring effort is all that is required. In addition to the program above outlined, the Commission will, at this time, install two permanently cased holes in which we will conduct nuclear moisture probes. We are not, at this time, satisfied that the nuclear moisture probes will be conclusive; however, if after our initial efforts it proves to be an effective tool, we will increase the number of permanent holes through which this probe will be used.

527

Page 2
Foote Mineral Company
March 6, 1970

Another problem encountered by this Commission in its efforts was that of earth cracking. The general area of ponding operations has been heavily irrigated by underground water for many years. There is a general subsidence which is believed to be the result of this withdrawal of underground waters. Investigation of the property during our study showed the presence of a relatively new earth crack apparently approaching Pond #4 from the east. To determine the extent of this crack four trenches were constructed through the crack and beyond the crack towards the pond. The closest this trench brought the crack at present to the pond was approximately 100 feet. The Commission has projected the extent of this crack and has interposed a permanent trench approximately 20 feet from the eastern-most edge of Pond #4. It was the feeling of the concerned parties that should this crack extend further, it may easily be noted in the wall of this trench and remedial actions can be taken. These actions will consist of the immediate draining of the pond and necessary drilling and trenching to establish the location of the crack. At this point the bottom of the pond will be dug out and a plastic liner inserted, clay and the existing type of pond bottom replaced. We feel that this will more than adequately prevent interference of the pond's bottom by this crack.

I hope that the information we have furnished will be helpful to you. Should there be any further information you may desire please do not hesitate to advise.

Sincerely,

John Bannister
Executive Secretary

JB:jd
Enc.

527

March 3, 1970

Foots Mineral Company
Attention: Mr. Page Edwards
Silver Peak, Nevada 89047

Gentlemen:

We are in receipt of your inquiry of February 26, 1970, concerning the surveillance efforts of this Commission as to a salt mining operation opening up near Phoenix, Arizona. To date we have had investigation made concerning both surface and subsurface soil conditions. This has been done through contract with a local firm. We, of course, have received a report back from them. Briefly, they have recommended that we periodically take cores throughout the area and compare the water content with the samples previously obtained. In addition, we have sampled and analyzed all water wells within a mile of the operation together with the water being used to inject into the salt formation and the resulting brine.

Prior to any effort on this Commission's part a meeting was called of all parties concerned and we now have a meeting forthcoming, i.e. March 5th, to discuss the results of our investigation and our proposed monitoring program.

For your information I am enclosing a copy of the report made to this Commission By Engineers Testing Lab. At this time I request that this information be treated as confidential by you. I will likewise advise you of the results of our meeting of March 5th. If there is any other information you may desire will you please advise.

Sincerely,

John Bannister
Executive Secretary

JB:jd
Enc.

507

SALT
FILE



FOOTE MINERAL COMPANY
SILVER PEAK OPERATION

SILVER PEAK, NEVADA. 89047

February 26, 1970

Mr. John Bannister
Room 202, 1624 West Adams
Phoenix, Arizona 85007

Dear Mr. Bannister:

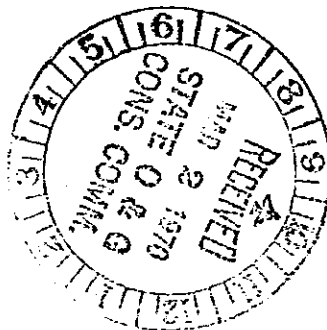
The attached letter will introduce our general interest in writing you. We are operating solar evaporation ponds in Silver Peak, Clayton Valley, Esmeralda County, Nevada, and we are very interested in obtaining any information as to monitoring seepage; incidentally, our tolerances are in the order of 0.015 inches/day.

Any information that you might have available will be greatly appreciated.

Very truly yours,

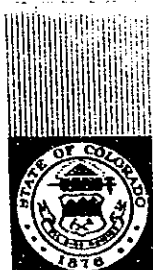
Page Edwards
Page Edwards
General Manager
Western Operations

PE:lm
attach.



*salt project
file*

FEB 12 1970



STATE OF COLORADO DEPARTMENT OF HEALTH

4210 EAST 11TH AVENUE • DENVER, COLORADO 80220 • PHONE 388-6111

R. L. CLEERE, M.D., M.P.H., DIRECTOR

February 5, 1970

Mr. Page Edwards
Foot Mineral Company
P. O. Box 757
Shiprock, New Mexico 87420

This is in answer to your recent request for information concerning a monitoring system designed to protect seepage to ground water prior to possible contamination. We contacted Mr. Jim Rouse on February 3, and were informed as follows:

- 1) Subject monitoring system is being designed for the Arizona Oil and Gas Conservation Commission by a consulting engineering firm.
- 2) The person for you to contact for further information would be Mr. John Bannister, Room 202, 1624 West Adams, Phoenix, Arizona 85007.
- 3) Mr. Rouse also commented that Mr. Gerald Grott of Southwest Salt Company located at Lichfield may also be cognizant of the program. Mr. Rouse, however, had no further information concerning Mr. Grott's address.

We hope that you will be able to obtain from the above persons the information that you require. If we can be of any further help to you in this matter, please call or write.

FOR DIRECTOR, WATER POLLUTION CONTROL DIVISION

Richard F. Henshaw
Richard F. Henshaw, P. E.
District Engineer

RFH:gg1



February 26, 1970

Mr. Stanley Womer
Staff Administrator
Office of the Governor
State House
Phoenix, Arizona 85007

Re: Salt Project, Glendale Avenue and Dysart Road,
Maricopa County

Dear Mr. Womer:

Enclosed for payment is the initial bill from Engineers Testing Laboratories, Inc., covering their investigation for this Commission of the above-identified project. The report involved has been furnished to this Commission and a copy delivered to you earlier. We respectfully request that you process this bill for payment.

As previously discussed with you, we will be billed an additional \$400 no later than March 15 for additional investigation work by Engineers Testing Laboratories, Inc. This additional work was made necessary by an increase in the ponding area subsequent to the initial investigation. These two bills, i.e., \$1,700 and \$400, will complete Engineers Testing Laboratories, Inc. investigating charges.

It is anticipated that some of the actual surveillance work will be done by Engineers Testing Laboratories, Inc., and, of course, at a later date this will necessitate additional funds made available to them.

The initial surveillance of this area will be made by this Commission in conjunction with the Water and Hydrology Department of the University of Arizona. The cost of this effort, which will include gravity survey of the area, together with a detailed contour mapping of the area, will be \$1,000. The University of Arizona is currently preparing a bill for this amount and it will be forwarded to you before March 15th.

527

Mr. Stan Womer
2-26-70
Page 2

The amount of \$3,500 was made available from the Governor's Professional Services fund to this Commission for our initial study and first monitoring work. The above-identified \$3,100 will complete our need through July, 1970. Prior to December, 1970, this Commission will need an additional \$1,500 for an additional monitoring effort. As explained to you earlier, this project will be monitored twice in 1970 and we anticipate thereafter that a yearly monitoring schedule will be sufficient. It will be July, 1971, before this Commission will be able to reflect any of the yearly monitoring cost in its budget.

Should you have any questions, please advise.

Yours truly,

John Bannister
Executive Secretary

JB:vb

Enc.

527

February 24, 1970

Mr. Stanley Womer
Staff Administrator
Office of the Governor
State House
Phoenix, Arizona 85007

Re: Salt Project, Glendale Avenue and Dysart Road, Maricopa
County

Dear Mr. Womer:

Attached please find a copy of letter calling a meeting concerning the captioned project. As you know, this Commission has been assigned the duties of monitoring any potential pollution of fresh water underlying the ponding area involved.

Also enclosed herewith is the initial report prepared by Engineers Testing Laboratories, Inc., on the conditions in this area. After this initial investigation was made, pursuant to our letter agreement of November 11, 1969, at a then agreed upon price of \$1,700, an additional ponding area was opened by the operator and it has consequently become necessary to order additional investigating work of approximately \$400. There will be two separate bills covering this work.

Our investigations, to date, have shown that there is a relatively uniform and stable soil condition under the ponding area. This condition, considering its permeability and its unsaturated condition, is most favorable for the conduct of the company's operations and should adequately protect the fresh water area from potential pollution, particularly in view of the constant monitoring to be maintained by this Commission.

As above indicated, after the initial investigation had been made, additional ponding areas have been opened. This necessitated an enlarged area of investigation and, of course, an increased expense. This investigation has brought forth the

527

Mr. Stanley Womer
2-24-70
Page 2

possibility of some surface faulting entering the ponding area. At this time, however, this does not seem to present a threat to the underlying fresh water. It will be necessary, of course, to carefully monitor this cracking. In conjunction with the Water and Hydrology Department of the University of Arizona and as part of our monitoring operation, a gravity survey and detailed mapping of the local area will be conducted.

In addition to the \$2,100 (i.e. \$1,700 plus \$400) already spent in connection with our initial study phases, it will be necessary for this Commission to draw upon your office for an additional \$1,000. This \$3,100 will cover total investigation and monitoring costs through July, 1970. As discussed with you on the phone, until such time as this Commission is able to reflect this monitoring cost within its budget, it is expected payments will be made from the Governor's Professional Services Fund. Between July, 1970 and December, 1970, an additional \$1,500± will be spent in this monitoring effort. By the end of 1970, it should be necessary to monitor the operations only once a year at a cost of approximately \$1,500 per year. It is our desire to monitor this operation twice in 1970 to determine that it will be safe; thereafter to monitor only on a yearly basis.

We will keep you fully advised of developments of the March 5th meeting.

Regards,

John Bannister
Executive Secretary

JB/vb

Enc.

cc - Blind
Dr. Hasan Qashu
Mr. Lewis E. Scott

527

February 11, 1970

Dr. Hasan K. Qashu
Hydrology & Water Resources
University of Arizona
Tucson, Arizona 85721

Re: Salt Project - Glendale Avenue
& Dysart Road, Maricopa County

Dear Hasan:

At long last I am enclosing Engineers Testing Laboratories, Inc., report on the captioned project.

As you know, it is my desire to proceed with this now as rapidly as possible. I feel that it is expedient that you, Mr. Lewis Scott, Mr. Jim Scurlock and myself get together prior to the meeting so that we may go in pretty much of one mind. Consequently, I wonder if you can be available for a meeting on Friday, February 20th, either here or in Tucson, at your convenience. If you will advise us at your earliest opportunity, I will appreciate it.

I am currently reproducing this report so that each of the parties attending the meeting will have a copy. In previous discussions, you indicated you would like to make a report incorporating the Engineers Testing Lab report therein. If this is so, this much of the report can be considered accomplished. At this time we are reproducing 15 copies which will be mailed out to the people attending the meeting, with extra copies for this office. Should you desire extra copies, please advise.

Sincerely,

John Bannister
Executive Secretary

507
/vb

Enc.

January 21, 1970

Southwest Salt Company
Mr. John Savoy
512 Arizona Bank Building
Phoenix, Arizona 85003

Re: Southwest Salt Company #1 Strat
T2N, R1W, G & SRM
Sec. 2: SW/4 SW/4
Maricopa County
Permit #527

Dear Mr. Savoy:

Enclosed please find your approved Application for Permit to Drill, Receipt No. 2861 covering the \$25 filing fee, and our Permit To Drill No. 527. Also enclosed are miscellaneous instruction sheets for your information.

It is our understanding that the following logs have been taken on the well: Neutron Porosity, Formation Density, and Dual Induction. Copies of these logs should be furnished to this Commission at your earliest convenience. The Commission will further require a set of samples. We understand that there are currently samples in Tucson in the charge of Dr. Wes Peirce. Inasmuch as our samples would be sent to Dr. Peirce in any event, perhaps the simplest way would be to request Dr. Wes Peirce to turn the samples now in his possession to the Commission. This, of course, would completely satisfy our requirements.

I would like to express our appreciation for your cooperation.

Sincerely,

John Bannister
Executive Secretary

JB:jd
Enc.

January 16, 1970

Southwest Salt Company
Mr. John Savoy
512 Arizona Bank Building
Phoenix, Arizona 85003

Re: Permit for Southwest Salt Company #1 Strat
SW/4 SW/4 Section 2-T2N-R1W
Maricopa County

Dear John:

We are still awaiting the necessary survey plat prior to
issuance of the permit. Please comply with this regula-
tion as soon as possible.

Sincerely,

John Bannister
Executive Secretary

jd
cc: Mr. Jerry Grott

527



OFFICE OF
Oil and Gas Conservation Commission
STATE OF ARIZONA
ROOM 202
1624 WEST ADAMS
Phoenix, Arizona 85007
PHONE: 271-5161

January 15, 1970

PRESS RELEASE

The Oil and Gas Conservation Commission of the State of Arizona has assumed jurisdiction over operation of the Southwest Salt Company in its salt mining venture located northwest of Phoenix near the intersection of Glendale Avenue and Dysart Road.

The Southwest Salt Company has located a commercial deposit of salt, the top of the formation being some 800 feet below the surface of the ground. The company has drilled an injection well into the salt and will mine the deposit by introducing fresh water into the formation and recovering the resulting brine. The brine will then be ponded at this location and, when evaporation has occurred, the recovered salt will be packaged for commercial purposes. The cattle feeding industry in the state apparently will be the prime commercial target. It is estimated the company will produce in the neighborhood of 50,000 tons of salt per year. The amount of water used by the company for this operation will be considerably less than the amount formerly used for irrigation of the acreage involved.

The Oil and Gas Conservation Commission is charged with preventing pollution of underground fresh waters from this operation. Dr. Hasan K. Qashu of the Hydrology and Water Resources Department of the University of Arizona will act as consultant to the Oil and Gas Conservation Commission on this operation. Dr. Qashu is recognized as one of the leading authorities in the state on ground water pollution problems and, under his direction, a system of monitoring and control of any potential pollution problems from this mining operation will be established.

Prior to the institution of pollution controls, a meeting of all interested parties will be held to discuss Dr. Qashu's proposals.

The successful completion of this project will introduce a new source of economy into Arizona.

527

January 15, 1970

Dr. Hasan K. Qashu
Hydrology & Water Resources Department
University of Arizona
Tucson, Arizona 85721

Dear Hasan:

As promised, here is a statement you may release to the Tucson press. Please feel free to make any changes or corrections which you feel would be of benefit. Needless to say, we will stand behind anything you do release.

Yesterday I mailed to you some prior analyses of water from some of the wells which the Health Lab happened to have in its files. I feel this will be a little additional information for your efforts.

I had occasion today to speak to some El Paso Natural Gas Company's personnel and requested that they release the top 800 feet of their seismic records in this area to us. While they did not definitely commit their company, it was their feeling that El Paso will cooperate and give us this information. I stressed the importance of early action and feel in a reasonable time they should be able to have these logs for us.

Again, I would like to express my appreciation for the courtesies you extended me on my recent visit with you.

Sincerely,

John Bannister
Executive Secretary

/vb

Enc.

537

December 26, 1969

Southwest Salt Company
Mr. John Savoy
512 Arizona Bank Building
Phoenix, Arizona 85003

Re: Permit for Southwest Salt Company #1 Strat
SW/4 SW/4 Section 2-T2N-R1W
Maricopa County

Dear John:

We are returning to you your copy of the bond you submitted for the captioned well. I have discussed the requirements of permitting this well including a survey of the location with your office several times as well as with Mr. Jerry Grott. This Commission feels that an exact location is most necessary in the event that any question should arise as to possible contamination, etc. However, as you are aware, it is a necessary requirement in securing a permit. Consequently, we request that you secure a survey plat at your earliest convenience.

Sincerely,

John Bannister
Executive Secretary

JB:jd

507



Oil and Gas Conservation Commission

STATE OF ARIZONA

5150 N. 16th STREET, SUITE B-141
PHOENIX, ARIZONA 85016
PHONE: (602) 255-5161

August 27, 1990

Ms. Betty Johns
Manager of Insurance Accounting
Morton International, Inc.
110 North Wacker Drive
Chicago, IL 60606-1560

RE: Southwest Salt Company
Performance Bonds 8306106 and 8418292

Dear Ms. Johns:

In reply to your letter of August 20, this letter represents this Commission's approval to release the referenced performance bonds 8306106 and 8418292.

Our records show that the wells drilled under the referenced bonds, namely Roach-Baker 1, permit 527, and Roach-Baker 2, permit 548, have been plugged and abandoned to the satisfaction of this Commission.

Sincerely,

Steven L. Rauzi

Steven L. Rauzi
Oil & Gas Specialist

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS

Bond Serial No. 83 06 106

That we: SOUTHWEST SALT COMPANY, an Arizona corporation

of the County of Maricopa in the State of Arizona

as principal, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND

of Baltimore, Maryland

AUTHORIZED TO DO BUSINESS WITHIN the State of Arizona.

as surety, are held and firmly bound unto the State of Arizona and the Oil and Gas Conservation Commission, hereinafter referred to as the "Commission", in the penal sum of FIVE THOUSAND AND NO/100 (\$5,000.00) lawful money of the United States, for which payment, well and truly to be made, we bind ourselves, and each of us, and each of our heirs, executors, administrators or successors, and assigns jointly and severally, firmly by these presents.

The conditions of this obligation are that, whereas the above bounden principal proposes to drill a well or wells for oil, gas or stratigraphic purposes in and upon the following described land situated within the State, to-wit:

Southwest quarter of the southwest quarter Section II, Township 2 North, Range 1 West, Maricopa County

(May be used as blanket bond or for single well)

NOW, THEREFORE, if the above bounden principal shall comply with all the provisions of the Laws of this State and the rules, regulations and orders of the Commission, especially with reference to the requirements of A.R.S. §27-516, providing for the proper drilling, casing and plugging of said well or wells, and filing with the Oil and Gas Conservation Commission all notices and records required by said Commission, then in the event said well or wells do not produce oil or gas in commercial quantities, or cease to produce oil or gas in commercial quantities, this obligation is void; otherwise it shall remain in full force and effect.

Whenever the principal shall be, and declared by the Oil and Gas Conservation Commission in violation of the Laws of this State and the rules, regulations and orders of the Commission, the surety shall promptly:

1. Remedy the violation by its own efforts, or
2. Obtain a bid or bids for submission to the Commission to remedy the violation, and upon determination by the Commission and the Surety of the lowest responsible bidder, arrange for a contract between such bidder and the Commission, and make available as work progresses sufficient funds to pay the cost of remedying the violation; but not exceeding, including other costs and damages for which the surety may be liable hereunder, the amount set forth in the first paragraph hereof.

Liability under this bond may not be terminated without written permission of this Commission.

WITNESS our hands and seals, this 19th day of December, 1969

SOUTHWEST SALT COMPANY

WITNESS our hands and seals this

19th day of December, 1969

FIDELITY AND DEPOSIT COMPANY OF MARYLAND

A. Grant Casson, Jr. Agent-in-Fact

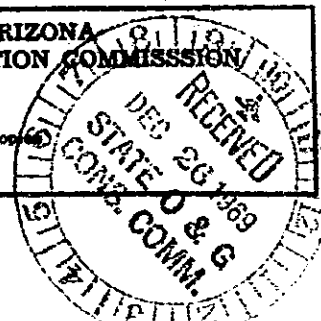
Surety, Resident Arizona Agent
If issued in a state other than Arizona)

(If the principal is a corporation, the bond should be executed by its duly authorized officers, with the seal of the corporation affixed. When principal or surety executes this bond by agent, power of attorney or other evidence of authority must accompany the bond.)

Approved Date: 12-26-69
STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION
By: John V. Gannister

Permit No. 527

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION
Bond
File Two Copies
Form No. 2



Power of Attorney
FIDELITY AND DEPOSIT COMPANY OF MARYLAND

HOME OFFICE, BALTIMORE, MD.

KNOW ALL MEN BY THESE PRESENTS: That the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, a corporation of the State of Maryland, by WM. H.C. GRIFFITH, Vice-President, and M. A. KELLY, Assistant Secretary, in pursuance of authority granted by Article VI, Section 2, of the By-Laws of said Company, which reads as follows:

"The President, or any one of the Executive Vice-Presidents, or any one of the additional Vice-Presidents specially authorized so to do by the Board of Directors or by the Executive Committee, shall have power, by and with the concurrence of the Secretary or any one of the Assistant Secretaries, to appoint Resident Vice-Presidents, Resident Assistant Secretaries and Attorneys-in-Fact as the business of the Company may require, or to authorize any person or persons to execute on behalf of the Company any bonds, undertakings, recognizances, stipulations, policies, contracts, agreements, deeds, and releases and assignments of judgments, decrees, mortgages and instruments in the nature of mortgages, and also all other instruments and documents which the business of the Company may require, and to affix the seal of the Company thereto."

does hereby nominate, constitute and appoint A. Grant Kasson, Jr. of Phoenix, Arizona.....

its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: any and all bonds and undertakings.....

And the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Company, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the Company at its office in Baltimore, Maryland, in their own proper persons.

The said Assistant Secretary does hereby certify that the foregoing is a true copy of Article VI, Section 2, of the By-Laws of said Company, and is now in force.

IN WITNESS WHEREOF, the said Vice-President and Assistant Secretary have hereunto subscribed their names and affixed the Corporate Seal of the said FIDELITY AND DEPOSIT COMPANY OF MARYLAND, this 15th day of September, A.D. 19 65.

ATTEST: FIDELITY AND DEPOSIT COMPANY OF MARYLAND

(SIGNED)

(SEAL)

STATE OF MARYLAND
CITY OF BALTIMORE

On this 15th day of September, A.D. 19 65, before the subscriber, a Notary Public of the State of Maryland, in and for the City of Baltimore, duly commissioned and qualified, came the above-named Vice-President and Assistant Secretary of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and they each acknowledged the execution of the same, and being by me duly sworn, severally and each for himself depose and saith, that they are the said officers of the Company aforesaid, and that the seal affixed to the preceding instrument is the Corporate Seal of said Company, and that the said Corporate Seal and their signatures as such officers were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporation.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal, at the City of Baltimore, the day and year first above written.

(SIGNED)

(SEAL)

FRANK G. MEURER

Notary Public Commission Expires July 1, 1967

D. T. HOLLYDAY

CERTIFICATE

I, D. T. HOLLYDAY, Assistant Secretary of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the attached Power of Attorney dated September 15th, 19 65, in behalf of A. Grant Kasson, Jr. of Phoenix, Arizona, is a true and correct copy and that same has been in full force and effect since the date thereof and is in full force and effect on the date of this certificate; and I do further certify that the said WM. H.C. GRIFFITH and M. A. KELLY, who executed the attached Power of Attorney as Vice-President and Assistant Secretary respectively, were on the date of the execution of the attached Power of Attorney the duly elected Vice-President and Assistant Secretary of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, and that the said WM. H.C. GRIFFITH was one of the additional Vice-Presidents specially authorized by the Board of Directors to appoint any Attorney-in-Fact or to authorize any person or persons to execute on behalf of the Company any bonds, recognizances, stipulations, undertakings, deeds, releases of mortgages, contracts, agreements and policies, and to affix the seal of the Company thereto as provided in said Article VI, Section 2 of the By-Laws of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seal of the said Company, this 19th day of December, 19 69.

GEORGE M. HILL
JOHN E. SAVOY
PHILIP W. MARQUARDT
DANIEL D. HOLLY

LAW OFFICES
HILL & SAVOY
512 ARIZONA BANK BUILDING
PHOENIX, ARIZONA 85003
TELEPHONE 258-7523

KENNETH I. TODD

December 23, 1969

Mr. John Bannister, Executive Secretary
Oil and Gas Conservation Commission
State of Arizona
1624 West Adams, Room 202
Phoenix, Arizona 85007

Re: Permit for SOUTHWEST SALT COMPANY
#1 Strat, SW/4 SW/4 §2-T2N-R1W
Maricopa County, Arizona

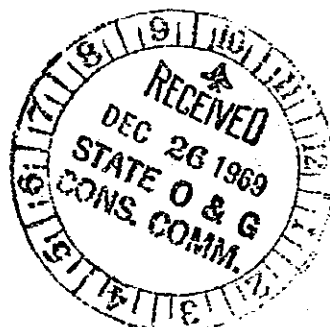
Dear Mr. Bannister:

Enclosed herewith please find two executed copies of the Performance Bond as required by your department. We were not aware that you required a copy of the plat by a registered surveyor, and therefore we do not have same available at this time, and do not feel that this should be a requirement.

Very truly yours,


For HILL & SAVOY

John E. Savoy/ch
Enclosures



X-Chrono
~~507~~

December 22, 1969

Southwest Salt Company
c/o Mr. John E. Savoy
512 Arizona Bank Building
Phoenix, Arizona 85003

Re: Permit for Southwest Salt Company #1 Strat
SW/4 SW/4 Section 2-T2N-R1W
Maricopa County

Dear Mr. Savoy:

We are in receipt of the \$25 filing fee, the Application for Permit to Drill, the Organization Report, and the Well Completion Report. Before we are in position to issue this permit to drill we must receive a copy of the plat by a registered surveyor and a bond covering this well and signed by a Arizona Surety Agent. We will issue this permit upon receipt of this required material.

Sincerely,

John Bannister
Executive Secretary

jd

507

December 18, 1969

Southwest Salt Company
C/O Mr. John E. Savoy
512 Arizona Bank Building
Phoenix, Arizona 85003

Re: Permit for Southwest Salt Company #1 Strat
SW/4 SW/4 Section 2-T2N-R1W
Maricopa County

Dear John:

Please get this permit filed.

Sincerely,

John Bannister
Executive Secretary

JB:jd
Enc. (2)

501

GEORGE M. HILL
JOHN E. SAVOY
PHILIP W. MAROUARDT
DANIEL D. HOLLY

LAW OFFICES
HILL & SAVOY
512 ARIZONA BANK BUILDING
PHOENIX, ARIZONA 85003
TELEPHONE 258-7523

KENNETH I. TODD

December 11, 1969

Mr. John Bannister, Executive Secretary
Oil and Gas Conservation Commission
State of Arizona
Room 202
1624 West Adams Street
Phoenix, Arizona 85007

Re: Salt Ponding Project, Glendale Avenue and Dysart Road
SOUTHWEST SALT COMPANY

Dear Mr. Bannister:

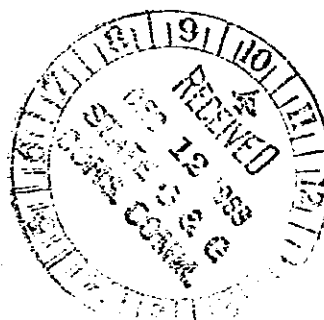
Since we cannot locate the xerox copies of the Application and Well Completion which we sent to you on December 4, I am enclosing other copies and would appreciate it if you would take the time to go over it and indicate any other facts that must be added and/or changes required.

Very truly yours,


For HILL & SAVOY

John E. Savoy/ch
Enclosures

Forms sent back
2-12-69 by
Grell who was an officer
JB



December 5, 1969

Southwest Salt Company
c/o Mr. John E. Savoy
512 Arizona Bank Building
Phoenix, Arizona 85003

Re: Permit for Southwest Salt Company #1 Strat Well, SW/4 SW/4
Section 2, Township 2 North, Range 1 West, Maricopa County

Dear John:

I have received xerox copies of your suggested application for permit and well completion. I am returning same to you so that you may complete and send to the office immediately.

You will notice on both that I have made some suggestions in red ink. As to the application for permit, you have failed to show the section in which the well is located, though you give the footage. As to the well completion, please include the date work was done on the well. The other changes, I think, are self-explanatory.

It is noted that you report porosity, density and dual induction logs were taken on these wells. Of course, copies of these logs must be filed with this Commission and samples during drilling must be available. I understand Wes Peirce has been furnished complete samples and I believe a letter from you to Dr. Peirce directing that samples furnished him be turned over to the Commission would suffice. As you may know, Wes does keep samples for the Commission in Tucson and this would prevent much searching and shipping of samples.

As you are aware, in addition to the two forms the Commission must be furnished with a bond, the organization report, filing fee of \$25.00, and a survey plat of the location.

Should you have any questions, please advise. I appreciate your cooperation.

Sincerely,

John Bannister
Executive Secretary

JB/vb
Enc.

cc - Gerald Grott

GEORGE M. HILL
JOHN E. SAVOY
PHILIP W. MARQUARDT
DANIEL D. HOLLY

LAW OFFICES
HILL & SAVOY
512 ARIZONA BANK BUILDING
PHOENIX, ARIZONA 85003
TELEPHONE 258-7523

KENNETH I. TODD

December 4, 1969

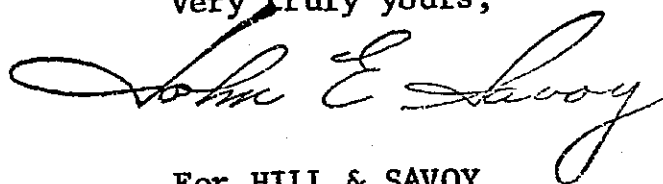
Mr. John Bannister, Executive Secretary
Oil and Gas Conservation Commission
State of Arizona
Room 202
1624 West Adams
Phoenix, Arizona 85007

Re: Salt Ponding Project, Glendale Avenue and Dysart Road
Southwest Salt Company

Dear Mr. Bannister:

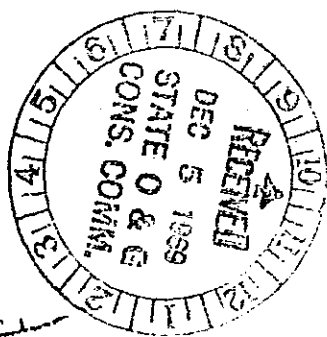
I am enclosing xerox copies of the forms which we needed to complete; the Application and Well Completion. If these are adequately filled in, I will sign the originals and then send them to you. If these documents are not satisfactory, please call.

Very truly yours,



For HILL & SAVOY

John E. Savoy/ch
Enclosures



December 3, 1969

Dr. Hasan Qashu
Hydrology and Water
Resources Department
University of Arizona
Tucson, Arizona 85721

Re: Salt Mining Project, Glendale Avenue
and Dysart Road, Phoenix, Arizona

Dear Hasan:

I attempted to phone you today in order to bring you up to date on the above project. Currently, water samples from all known wells within one mile radius of the drilling site have been taken and are being analyzed. Also, samples of the salt brine and the water from which it is currently being made have been delivered for analysis. Initial indications are that the salt brine contains cadmium in sufficient quantities to act as a tracer.

Pursuant to your suggestion, we have obtained drill cuttings of the salt from the injection well and these, too, have been delivered for testing. The lab indicates it will selectively pick some 60 grams of salt from these samples and prepare this for analysis with distilled water. They are anticipating finding the cadmium in this sample. Of course I will furnish you with a complete report from the lab as soon as it is available.

Presently, coring operations in the area of the salt ponds are being conducted. These actual operations should be completed today and I estimate that within the next two weeks full reports on both water samples and soil sampling should be available.

I have secured water analyses from Luke AFB of their wells over the past five years. I feel this history will be of benefit in our effort.

Again, let me express the appreciation of this Commission for your aid.

Sincerely,

John Bannister
Executive Secretary

/vb

December 1, 1969

Southwest Salt Company
34 West Monroe
Phoenix, Arizona 85003

Attention: Mr. John Savoy

Gentlemen:

On November 12, 1969, you were advised that this Commission was assuming jurisdiction over your operations at Glendale and Dysart Roads. You were requested at that time to secure a permit for the injection well which you have drilled. To date we have had no response to our letter. Will you please file the necessary application and supporting data at earliest convenience.

If we may be of help in any way, please advise.

Sincerely,

John Bannister
Executive Secretary

JB:jd
cc: Mr. Jerry Grott

X-Chrome

DEPARTMENT OF LAW
OFFICE OF THE
Attorney General
STATE CAPITOL
Phoenix, Arizona 85007

GARY K. NELSON
THE ATTORNEY GENERAL

FRANK SAGARINO
CHIEF ASSISTANT ATTORNEY GENERAL

November 13, 1969

The Honorable Jack Williams
Governor of Arizona
Capitol Building
Phoenix, Arizona

Attention: Mr. Stan Womer

My dear Governor:

You have asked the question whether or not the Oil and Gas Conservation Commission has the responsibility for "monitoring certain salt mining operations near Glendale Avenue and Dysart Road to prevent the contamination of subsurface water aquafer".

A.R.S. § 27-516.A reads in part as follows:

"A. The commission [Oil and Gas Conservation Commission] shall make rules and amend them from time to time as deemed necessary for the proper administration and enforcement of this article, including the following rules, regulations and orders:

"1. Requiring the drilling, casing and plugging of wells in a manner to prevent:

* * *

"(c) Pollution of fresh water supplies by oil, gas or salt water. . . ."

A well is defined in the definitions contained in A.R.S. § 27-501 as:

"20. 'Well' means and includes any hole drilled or spudded in for the purpose, with the intention, or under the representation of penetrating oil or gas bearing strata, or of

The Honorable Jack Williams
November 13, 1969
Page Two

penetrating any strata in search of stratigraphic data pertinent to the location of oil or gas bearing strata, whether or not in either case, oil or gas is actually discovered. The commission may, as it shall deem to be to the best interests of the state, determine that any hole drilled or spudded in shall be included within the above definition to the extent necessary for the administration and enforcement of the rules required by § 27-516. The determination of the commission shall be final in any circumstance involving the question of purpose, intent or representation provided such determination shall be subject to appeal as provided by § 27-526."

Rule 204 of the Rules and Regulations of the Oil and Gas Conservation Commission of the State of Arizona reads as follows:

"204 WELLS TO BE USED FOR FRESH WATER

"When the well or exploratory hole to be plugged may safely be used as a fresh-water well and such utilization is desired by the landowner, his agent, or lessee, notice shall be given to the Commission on the form prescribed (Form 26) signed by the landowner, his agent, or lessee and notarized in which the landowner, his agent, or lessee, assumes responsibility for the well and the final plugging. Such filing shall constitute compliance with the obligation of such person to plug the well, and further liability under the bond applicable to the well shall terminate. A written statement to that effect shall be given by the Commission so that the bond may be cancelled or made no longer effective with respect to that well."

From not only the words but the intent of the legislation, it would appear that the Oil and Gas Conservation Commission has the authority to monitor the salt mining operations as is needed.

The Honorable Jack Williams
November 13, 1969
Page Three

If the persons placing the salt mines feel the State lacks the authority, then two alternatives present themselves:
1. A lawsuit; and 2. Spell out in more detail in the next session of the Legislature the duty of the Commission to protect the fresh water supply of the citizens of this State.

Sincerely,

GARY K. NELSON
The Attorney General


JOHN M. MCGOWAN, II
Special Assistant Attorney General

JMM:ell

527

November 12, 1969

Mr. John E. Savoy
Southwest Salt Company
34 West Monroe
Phoenix, Arizona 85003

Dear Mr. Savoy:

Pursuant to ARS 27-516.A.1.C this is to advise you that the operations of your company at its location at Glendale and Dysart Roads must come under the jurisdiction of this Commission. The necessary actions on your part to accomplish this have been discussed in detail with Mr. Gerald J. Grott of your company.

You are requested immediately to secure a permit from this Commission for the well you have drilled on your property at the above mentioned location. Any further wells drilled in connection with this operation must likewise be permitted by the Commission. Full records concerning the well already drilled should be submitted as soon as possible.

The Commission currently is conducting an investigation through a contract with Engineers Testing Laboratories, Inc., to determine soil conditions, etc. in the area under and surrounding your ponds. When this information has been assembled, a monitoring program aimed at determining potential leakage will be commenced.

I know this Commission can count upon your cooperation.

Yours truly,

John Bannister
Executive Secretary

JB:jd

JACK WILLIAMS
GOVERNOR

OFFICE OF THE GOVERNOR
STATE HOUSE
PHOENIX, ARIZONA 85007

IN REPLY
REFER TO:

November 6, 1969

Mr. John Bannister
Executive Secretary
Oil and Gas Commission
Room 202, Annex East
Phoenix, Arizona 85007

Dear John:

This is your authorization to proceed with the execution of an agreement with Engineers Testing Laboratories, Inc., of Phoenix. In accordance with their proposal, signed by Lewis E. Scott, and presented to this office on November 6, 1969.

You are authorized to contract with Engineers Testing Laboratories, Inc. for the field investigation, laboratory testing and data analyses. The Oil and Gas Commission will monitor this work. Upon its completion, you may have Engineers Testing Laboratories, Inc. present us with an invoice for their professional services in an amount not to exceed \$1,700.

It is hoped that the State Health Department will be able to perform certain water analyses. If this is not possible and this work must be done by private laboratories, this office will honor an additional billing not to exceed \$2,000 for these professional services.

Sincerely,

Stan Womer
Stan Womer
Staff Administrator

SW:bs





OFFICE OF
Oil and Gas Conservation Commission
STATE OF ARIZONA
ROOM 202
1624 WEST ADAMS
Phoenix, Arizona 85007
PHONE: 271-5161

October 30, 1969

REPORT OF MEETING HELD OCTOBER 30, 1969 AT 9:30 A.M., AT 1624 WEST ADAMS, ROOM 204, PHOENIX, ARIZONA, CONCERNING SALT MINING OPERATIONS AT GLENDALE AVENUE AND DYSART ROAD, MARICOPA COUNTY, ARIZONA.

The following persons attended the meeting called by this Commission:

<u>Name</u>	<u>Representing</u>	<u>Location</u>
Mr. Gerald J. Grott	Southwest Salt Co.	Litchfield Park
Mr. Philip Meeske	Southwest Salt Co.	Litchfield Park
Major Fred Hancher	Luke Air Force Base	Luke AFB
Mr. Jay Baxter, Jr.	Luke Air Force Base	Luke AFB
Mr. Michael Pantano	Luke Air Force Base	Luke AFB
Mr. L. R. Kister	U.S. Geological Survey, WRD	Tucson
Mr. Herbert H. Schumann	U.S. Geological Survey, WRD	Phoenix
Mr. Jim V. Rouse	Fed. Water Pollut. Control	Denver
Dr. Francis S. Nakayama	U.S. Water Cons. Lab.	Phoenix
Mr. Lloyd E. Myers	U.S. Water Cons. Lab.	Phoenix
Dr. Hasan Qashu	Hydrology & Water Resources, Univ. Ariz.	Tucson
Dr. H. Wesley Peirce	Ariz. Bureau of Mines, Univ. Ariz.	Tucson
Mr. Joseph E. Obr	Ariz. State Health Dept.	Phoenix
Mr. Fritz Ryan	Ariz. State Land Dept.	Phoenix
Mr. Samuel F. Turner	Ground Water Hydrologist Consultant--Goodyear Farms	Phoenix
Mr. Lewis F. Scott	Engineers Testing Lab	Phoenix
Mr. John Bannister	Oil & Gas Conserv. Comm.	Phoenix
Mr. James R. Scurlock	Oil & Gas Conserv. Comm.	Phoenix

No attempt will be made in this report to reproduce the technical discussions but its purpose will be to try to summarize the tone of the meeting.

JACK WILLIAMS
GOVERNOR



OFFICE OF THE GOVERNOR
STATE HOUSE
PHOENIX, ARIZONA 85007

IN REPLY
REFER TO:

-1-

October 7, 1969

C
O
P
Y

Mr. Ralph Bilby
Attorney At Law
Valley National Bank Bldg.
2 E. Congress
Tucson, Arizona

Dear Ralph:

I am enclosing herewith memorandums relating to a problem that it is believed only the Oil and Gas Commission can solve.

Obviously the economy of the West side, (Luke Field, Litchfield, Farmers, Etc.) could be threatened with Salt pollution if proper precautions and perhaps prohibitions are not exercised.

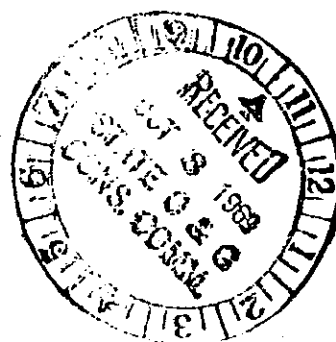
Appreciate your studying this matter and advising.

Sincerely,

Jack Williams

JW:ls
enc

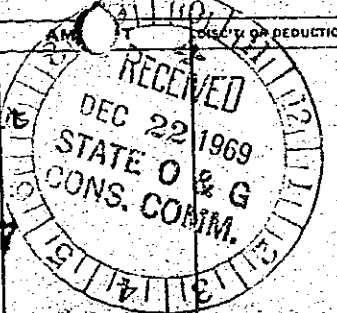
cc: Mr. John Bannister
Executive Secretary
Oil and Gas Commission



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PAYEE: DETACH THIS STATEMENT BEFORE DEPOSITING CHECK.

HILL & SAVOY PHOENIX, ARIZONA

DATE	DESCRIPTION	AMOUNT DISC'TY. OR DEDUCTION	NET AMOUNT
12/19/69 JES/ch	Filing Fee - Application for Permit to Drill or Re-Enter <u>SOUTHWEST SALT CO.</u>	527 	25.00